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user's manual & exercise handbook

ergOMETER

the swimming treadmill

VASA, INC.
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ergometer
USER'S MANUAL

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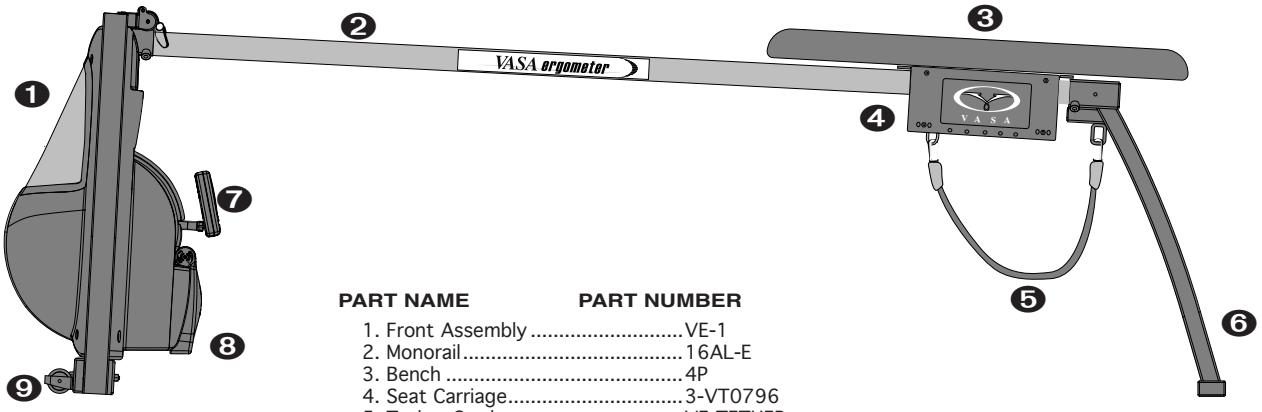
PART 1 - ASSEMBLY

1.1 - VASA ERGOMETER - PARTS DESCRIPTIONS



PART NAME	PART NUMBER
1. Front Assembly	VE-1
2. Monorail	16AL-E
3. Bench	4P
4. Seat Carriage	3-VT0796
5. Tether Cord	VE-TETHER
6. Rear Stanchion	VE-2
7. Monitor	VM-1
8. Damper Door	VE1-DD
9. Caster Wheel	23PS

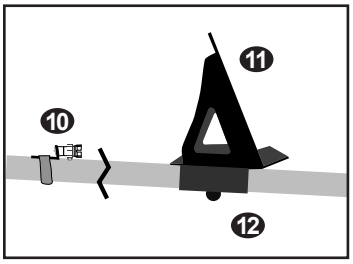
(Swim paddles, exercise handles not shown)

If KAYAK Ergometer, also includes these parts (see inset):

10. Monitor mount bracket	VE-K-MMB
11. Foot Bracket	VE-K-FB
12. FB Mounting bracket	VE-K-FP-C

(Exercise handles, kayak shaft not shown)

Kayak Parts



Please READ entire assembly section before beginning assembly.

The parts for your Vasa Ergometer are packed in three boxes (four if you upgraded to an XL bench). Please unpack and assemble your new Vasa Ergometer in the SPECIFIC ORDER outlined on the following pages. We recommend unpacking and assembling the parts from Box 1 and Box 2 (and 4 if applicable), and then unpacking and attaching the front assembly from Box 3. This specific order is to avoid any damage to the front assembly.

IMPORTANT: *Please save Box 3 and its inner packaging. Box 3 and its packaging is specifically designed to protect the front assembly. In the unlikely event that you would need to ship the Vasa Ergometer, we recommend using Box 3 and its packaging to ship the front assembly.*

VASA ERGOMETER - PARTS LIST

BOX 1 CONTENTS (measuring 36"x16"x9")

PART NAME	PART #	QUANTITY	LOCATION
REAR STANCHION ASSEMBLY	VE-2	1	BOX 1
STANDARD BENCH (or XL Bench)	4P (XL UPGR)	1	BOX 1 (BOX 4)
SEAT CARRIAGE ASSEMBLY	3-VT0796	1	BOX 1
TETHER CORDS (M, H)	VE-TETHER	2	SMALL BOX INSIDE BOX 1
INSTRUCTION MANUAL	IM	1	SMALL BOX INSIDE BOX 1
HARDWARE BAG	(see below)	1 bag	SMALL BOX INSIDE BOX 1
button head screw - 2 1/2"	11P	2	
hex jam nut	18PS	2	
hex cap screw - 1" (yellow zinc)	14SC	4	
lock washer	14A-P	4	
flat washer	19P	4	
hex key allen wrench - 3/16"	12A-PS	1	
hex key allen wrench - 5/32"	12B-PS	1	
wrench - 7/16"	14B-PS	1	
wrench - combo 9/16" & 1/2"	14D-PS	1	
screwdriver	VE-1-SDR	1	

If you ordered the SWIM ERGOMETER, you will receive these additional items:

EXERCISE HANDLES	8M-WHD	2	SMALL BOX INSIDE BOX 1
POWER PADDLES	PWR PPAD	1 pair	SMALL BOX INSIDE BOX 1

BOX 2 CONTENTS (measuring 89"x3"x3")

MONORAIL	16AL-E	1	BOX 2

BOX 3 CONTENTS (measuring 35"x29"x18")

FRONT ERGOMETER ASSEMBLY	VE-1-FF	1	BOX 3
MONITOR *(with 2 "AA" batteries)*	VM-1	1	SMALL BOX INSIDE BOX 3

If you ordered the KAYAK ERGOMETER, you will receive these additional items:

KAYAK ERG FOOT BRACE	VE-K-FB	1	BOX 3
FOOT BRACE MOUNTING BRACKET	VE-K-FP-C	1	BOX 3
CONNECTING HARDWARE	(see instructions sheet with foot brace)		BOX 3
KAYAK SHAFT ASSEMBLY	VE-K-SHAFT	1 (2 sections)	BOX 3
MONITOR MOUNT BRACKET ASSEMBLY	VE-K-MMB	1	BOX 3
3M DUAL LOCK VELCRO STRIP	VE-K-DLV	2	BOX 3

NOTE: Look for the KAYAK SYMBOL throughout the manual (shown here) for key instructions specific to the Kayak Kit.

SAVE ALL PACKAGING
Box & inner packaging for Box #3

1.2 - ASSEMBLING YOUR VASA ERGOMETER

Unpack and assemble your new Vasa Ergometer in the specific order outlined below (unpack and assemble the parts from Box 1 and Box 2 as instructed, then you will unpack and attach the front assembly from Box 3). This specific order is to avoid any damage to the front assembly.

> ***IMPORTANT:*** *Please save Box 3 and its inner packaging for the unlikely event that you would need to ship the Vasa Ergometer. Box 3 and its packaging is specifically designed to protect the front assembly.*

STEP 1: UNPACK BOX 1 AND BOX 2 (DO NOT UNPACK BOX 3 YET)

1.1. Unpack Box 1 and Box 2 and lay the contents out on the floor.

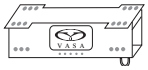
NOTE: **DO NOT UNPACK BOX 3**. Once the monorail, bench and rear stanchion are assembled, you will slide the front assembly out of Box 3 and attach it directly to the monorail.

BOX #1

STANDARD BENCH (4P) XL BENCH IN BOX #4

REAR STANCHION (VE2)

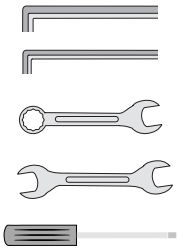
TETHER CORDS (VE-TETHER)



SEAT CARRIAGE (3-VT0796)

HARDWARE BAG INCLUDES:

2 1/2" button head screw (2)
hex jam nut (2)
1" hex cap screw (4)
lock washer (4)
flat washer (4)



3/16" hex key allen wrench (1)
5/32" hex key allen wrench (1)
7/16" wrench (1)
9/16"-1/2" combo wrench (1)
screwdriver (1)

IN BOX #1 - SWIM VERSION

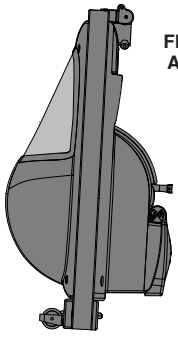
POWER PADDLES (PWR PPAD)

EXERCISE HANDLES (8M-WHD)

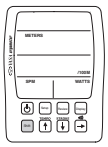
BOX #2

MONORAIL (16AL-E)

BOX #3



FRONT END ASSEMBLY



PERFORMANCE MONITOR (VM-1)

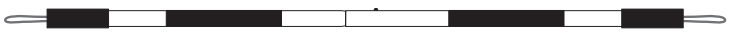
LOCATED WITHIN INTERNAL BOX

IN BOX #3 - KAYAK VERSION

FOOT BRACE (VE-K-FB) & BRACKET (VE-K-FMB)

MONITOR MOUNTING L-BRACKET (VE-K-MMB)

DUAL LOCK VELCRO (VE-K-DLV)



KAYAK SHAFT 2 PIECES (VE-K-SHAFT)

STEP 2: ASSEMBLE BENCH TO SEAT CARRIAGE

2.1. Lay the padded bench on the floor so the side with the four holes (with threaded metal nuts inside the bench) is facing up.

2.2. Position the seat carriage so that the metal bracket with the drilled holes is face down on the bench (Figure A). Line up the middle holes of the bracket with the holes in the padded bench. NOTE: The bench will be wider on one end than the other. Position the seat carriage so that the U-bolt on the seat carriage is at the narrower end of the bench.

2.3. Put one lock washer onto each of four 1" hex cap screws (brass colored). Then put one flat washer onto each of the four 1" screws.

2.4. Thread one screw with both washers through the middle hole on the corner brackets of the seat carriage (Figure B) and into the holes in the padded bench. Tighten the screws with the 7/16" wrench until the lock washer and the bolt are snug.

CAUTION: *Do not over tighten the hex cap screws, as this could pull out the metal T-nuts inside the bench.*

rolling too far forward.

Figure A

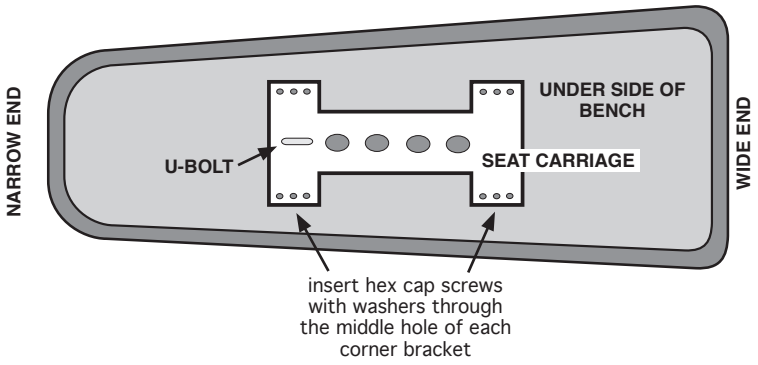
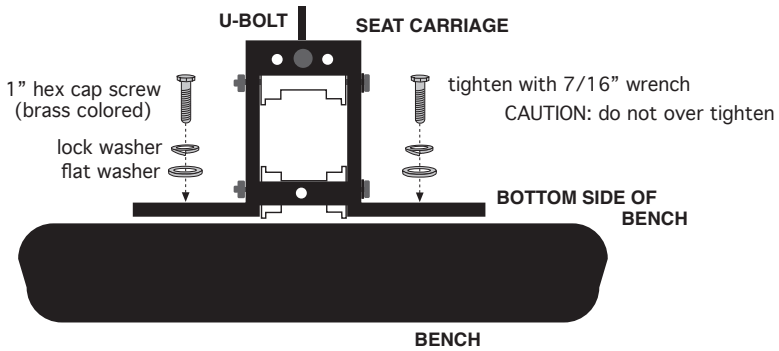

NARROW END
WIDE END
UNDER SIDE OF BENCH
U-BOLT
SEAT CARRIAGE
insert hex cap screws with washers through the middle hole of each corner bracket

Figure B



STEP 3: PADDED BENCH ASSEMBLY ONTO MONORAIL

3.1. Lay the bench assembly (with the seat carriage up) on the floor next to the monorail.

CAUTION: *To prevent damaging seat rollers when installing the monorail, carefully and slowly feed the monorail into the first set of rollers. Do NOT force through rollers. Hold the monorail level during the installation.*

3.2. Keep the monorail level with the T-slot channel facing up. Slowly feed the monorail between the first set of rollers (Figure A).

3.3. Gradually guide the monorail through to the second set of rollers (Figure B), continuing to keep it level. DO NOT FORCE through, so as not to damage the rollers.

3.4. After installing the rail through the seat carriage, it should look like Figure C.

Figure A

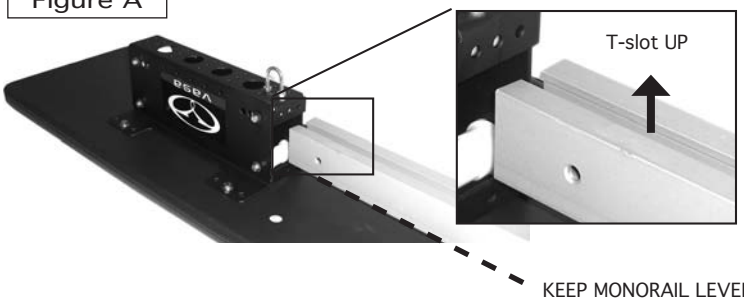
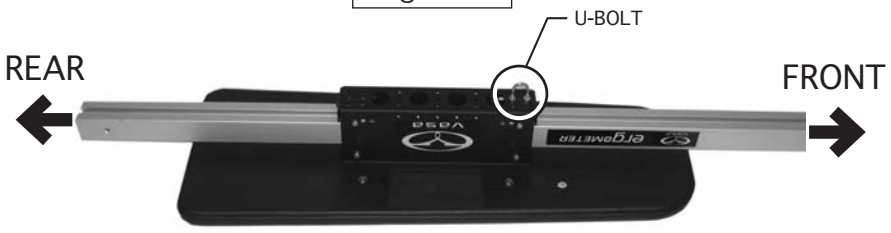


Figure B

carefully & slowly feed the monorail through 2nd set of rollers

Figure C



NOTE: You may find that the seat carriage seems "tight" on the monorail, rolling with some resistance. This is normal, since the rollers need to conform to the monorail. You'll need to do about 25 - 100 repetitions on your Vasa Trainer before the rollers wear and conform to the monorail and roll smoothly. As the rollers wear, they'll leave some residue on the monorail which needs to be wiped off regularly with a ScotchBrite pad, or a non-abrasive or cloth rag. Any dust or residue accumulation on the monorail will inhibit optimal functioning of the rollers. See maintenance section of this manual for instructions on how to clean your monorail.

STEP 4: MONORAIL INTO THE REAR STANCHION ASSEMBLY

4.1. Loosen the socket set screw on the corner of the rear stanchion head (Figure A) using the 3/16" hex key Allen wrench.

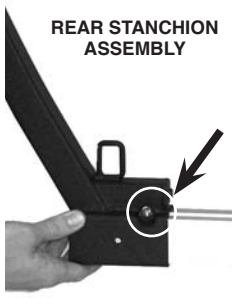
4.2. Hold the rear stanchion assembly upside down and slide the bracket over the rear section of the monorail (Figure B).

4.3 Align the holes and insert a 2 1/2" button head screw through bracket and monorail. Thread the hex jam nut on the end of bolt. Tighten to secure with a 5/32" Allen wrench and 7/16" wrench (Figure C).

4.4 Tighten the socket set screw against monorail using the 3/16" hex key Allen wrench. This will secure the monorail to the inside of the sleeve so that it won't loosen or rattle while in use (Figure C).

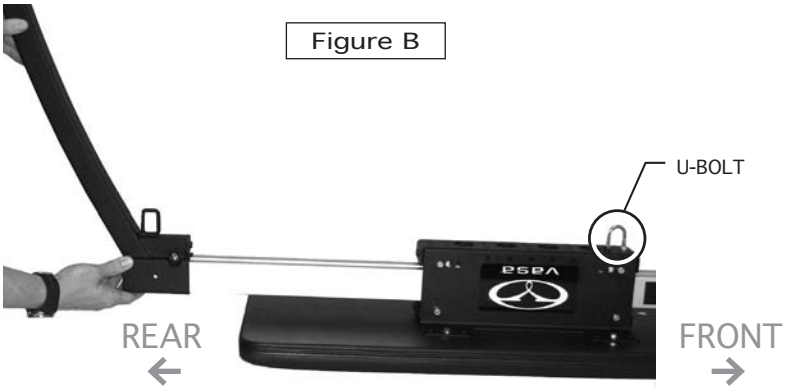
4.5 Affix a tether cord to the rear stanchion D-ring and the U-bolt on the seat carriage (Figure D).

Figure A



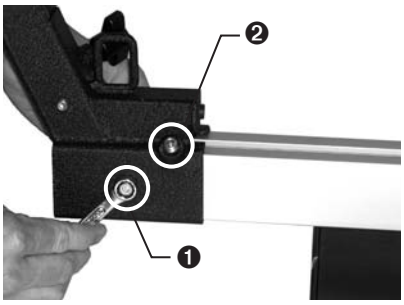
loosen the socket set screw

Figure B



slide the bracket on to the REAR of the monorail.
NOTE: The U-bolt is closer to front

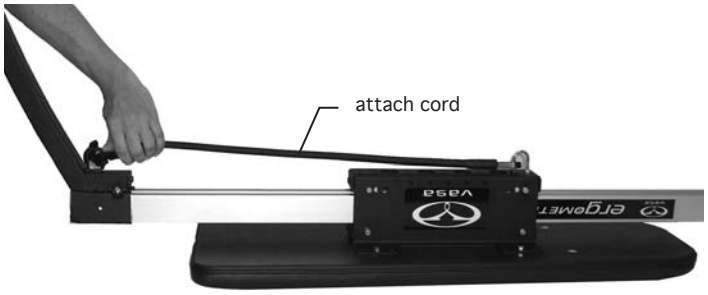
Figure C



1. insert and tighten 2 1/2" button head screw and hex jam nut.

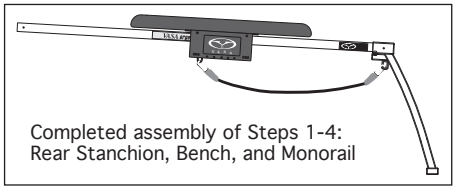
2. tighten socket set screw with 3/16" hex key wrench

Figure D



attach the tether cord to the seat carriage U-bolt and the rear stanchion D-ring

STEP 5: UNPACKING FRONT ERGOMETER ASSEMBLY (BOX #3)


Completed assembly of Steps 1-4:
Rear Stanchion, Bench, and Monorail

5.1. Carefully lay the box down on the side marked "SIDE 1".

5.2. Open the bottom of the box (Figure A). You will find an "Instruction Sheet" inside. *IMPORTANT:* ***DO NOT OPEN*** *THE TOP END OF BOX - YOU MUST OPEN THE BOTTOM END.*

5.3. After opening the bottom of the box, remove the cardboard and foam padding that were protecting the assembly (open end only). Set the cardboard insert aside. Place the foam padding in front of the box opening (Figure B). The foam padding will act as a cushion to prevent surface scratches upon removal. **SAVE BOX #3 AND ALL PACKAGING MATERIAL.**

IMPORTANT: *Before continuing, have the parts in STEP 1-4 (from the User's Manual) pre-assembled and close at hand. You will need to attach the front assembly to the monorail.*

CAUTION: *DO NOT LET GO OF THE FRONT ASSEMBLY. It will not stand securely by itself. Hold securely until it is attached to the monorail in STEP 6.*

5.4. Slide the entire front assembly out of the box (Figure C). Hold the top bar and lift to an upright position (Figure D). Set the Inner Box (containing the Monitor) aside until Step 9.

5.5. Tilt the front assembly so that the wheels engage, allowing for easy transport (Figure C). Be sure to have a secure hold on the frame so it does not fall over.

5.6. Wheel over to the monorail / rear stanchion assembly. In your User's Manual, follow STEP 6 to attach to monorail. *NOTE: have the 3/16" hex key wrench available in case you need to loosen the set screw on the front assembly in the next step.*

Figure A

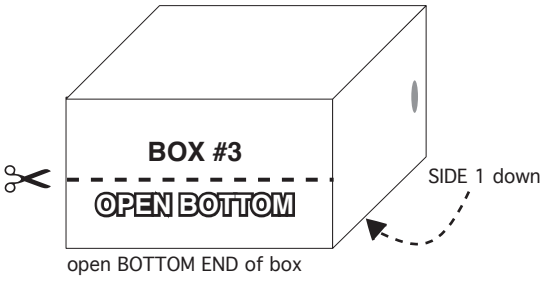


Figure B

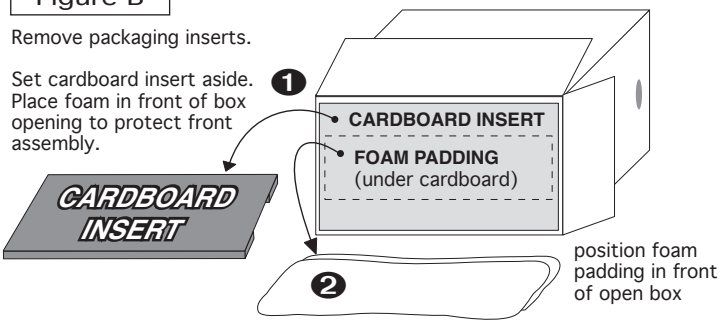

Remove packaging inserts.
Set cardboard insert aside. Place foam in front of box opening to protect front assembly.
1
CARDBOARD INSERT
FOAM PADDING
(under cardboard)
CARDBOARD INSERT
2
position foam padding in front of open box

Figure C

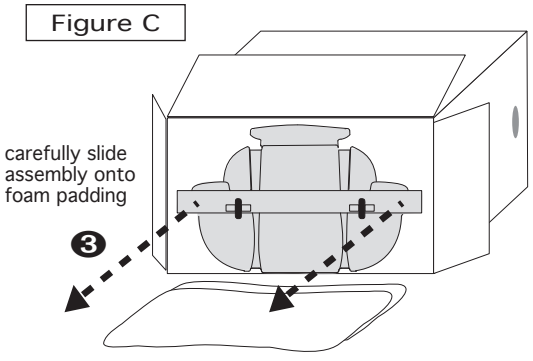
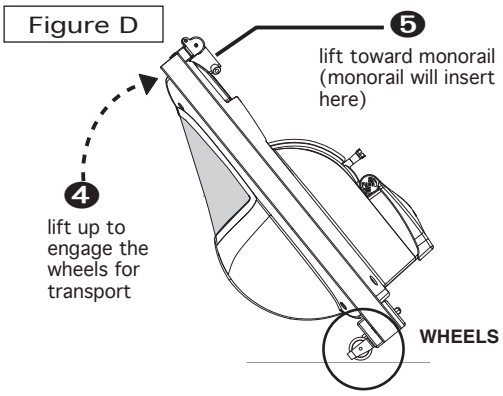


Figure D



SAVE ALL PACKAGING
Box & inner packaging

KAYAK EQUIPMENT - SUPPLEMENTAL INSTRUCTIONS REQUIRED

If you have purchased a KAYAK ERGOMETER or KAYAK KIT, please locate the separate instruction sheet packaged with the Kayak Foot Brace (part #VE-K-FB). You will need to install kayak specific parts at this point prior to continuing with your assembly.

STEP 6: ATTACH FRONT ERGOMETER ASSEMBLY TO MONORAIL

6.1. Hold the front Ergometer assembly upright in one hand. Lift the front end of the monorail up to the height of the front stanchion sleeve (on the Ergometer assembly). Insert the monorail into the sleeve until the holes in the sleeve line up with the holes in the monorail (Figure B).

NOTE: If the monorail will not slide all the way into the front stanchion sleeve, loosen the socket set screw on the corner of the front Ergometer assembly (Figure A) using the 3/16" hex key allen wrench. **Do not remove** the socket set screw. Just loosen enough so the monorail can fit inside the sleeve.

6.2. Insert one 2 1/2" button head screw through the sleeve and the monorail (Figure C). Thread and tighten one hex jam nut (Figure C). Tighten with 5/32" allen wrench and 7/16" wrench.

6.3. Tighten the socket set screw against monorail using the 3/16" allen wrench. This will secure the monorail to the inside of the sleeve so that it won't loosen or rattle while in use (Figure C).

Figure A

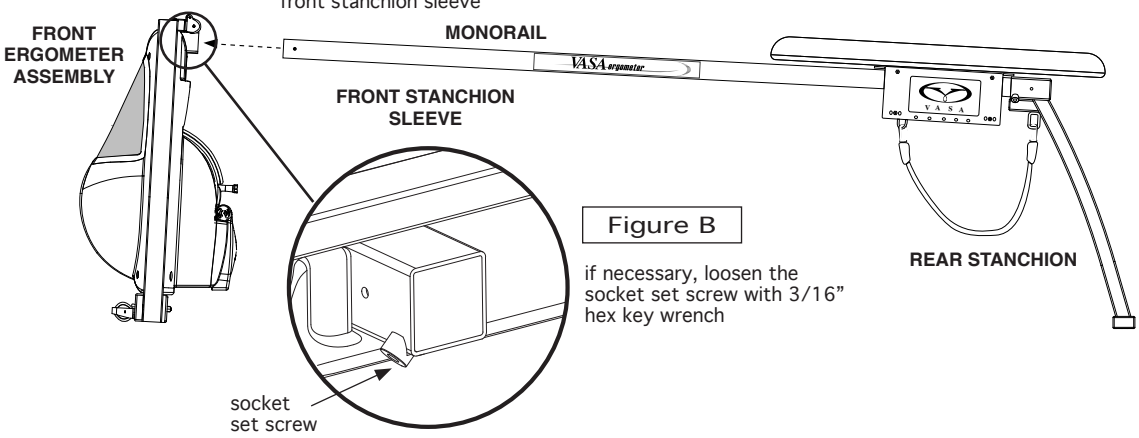
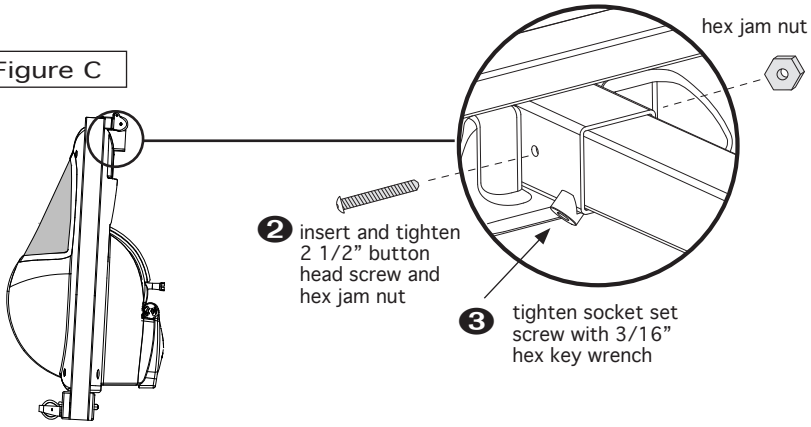


Figure B

Figure C



INSTALLATION TIP

If the 2 1/2" bolt is difficult to install, press the rear cover in so it provides more clearance for the 2 1/2" screw (see photo right). In some cases, it might be necessary to remove the front cover first to allow more room to push in the rear cover.

STEP 7: ATTACHING PADDLES OR HANDLES TO DRIVE CORD

7.1. Choose which attachment you would like to use for your workout: swim paddles, exercise handles, kayak shaft or canoe paddle.

7.2. Take the drive cord clip (Figure A) on each end of the drive cords, and snap desired attachment into the connection loop/ring (Figure B).

NOTE: The Kayak Shaft is shipped in two sections. You must pre-assemble the kayak shaft before attaching it to the drive cords. Assembly of Kayak Shaft shown below (Figure C).

Figure A

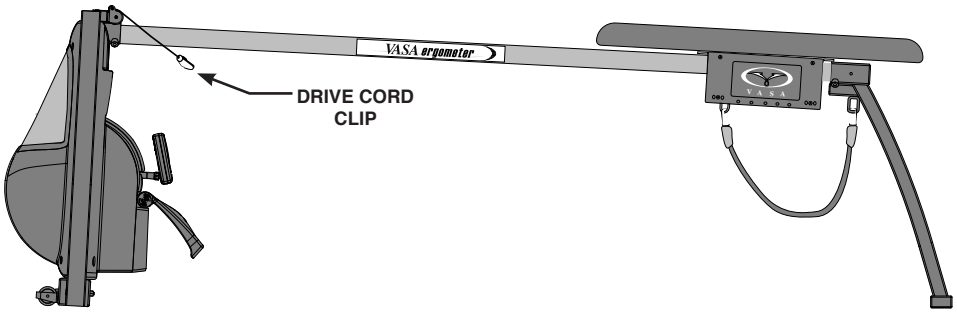


Figure B

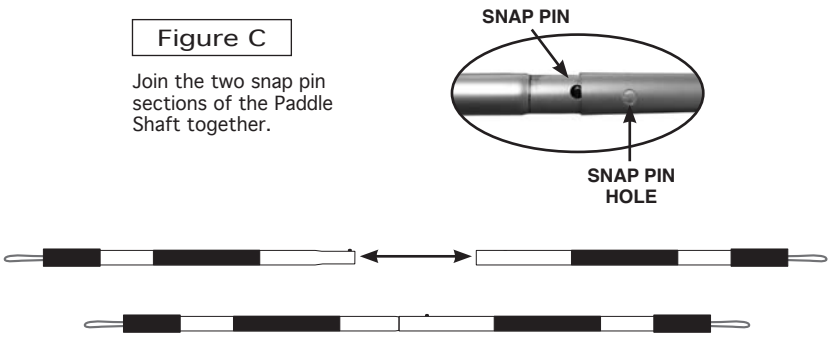
SWIM PADDLES
Attach the clip to bail on paddle

EXERCISE HANDLES
Attach the clip to metal D-ring on handle

KAYAK or CANOE PADDLE SHAFT
Attach the clip to cord loop on paddle shaft

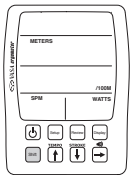
Figure C

Join the two snap pin sections of the Paddle Shaft together.



PERFORMANCE MONITOR INSTALLATION OVERVIEW

The following steps will walk you through the proper installation of the Performance Monitor. The "Monitor Location" section will review the various monitor locations. Select the location that will provide the best visibility for your training needs.



Steps 8-10 cover:
- Battery Installation
- Attaching the Cables
- Monitor Location Options
- Monitor Installation and Adjustment

Performance monitor operation will be covered in **Part 2** of this manual.

⚠ ***CAUTION:*** *The monitor is a sensitive unit. Please handle with care at all times.*

STEP 8: INSTALLING BATTERIES IN THE PERFORMANCE MONITOR

8.1. Locate the performance monitor in the small box packed inside BOX 3.

8.2. Insert the two "AA" batteries (included) into the battery compartment on the back side of the monitor.

IMPORTANT: REMOVE THE BATTERIES if the Vasa Ergometer will be idol for 3 months or more.

STEP 9: ATTACHING THE CABLES TO THE PERFORMANCE MONITOR

NOTE: Step 9 is informational only at this time. Do NOT connect the monitor to connection cables until directed to in Step 10.

9.1. The back of the monitor has three connection ports: X, R, and L (Figure A). You will only be using the ports labeled "R" and "L". ***Do NOT use the port labeled "X" .***

9.2. Locate the two cables extending from rear cover. The cables will be exiting from either:
1) the cable channel above the damper door (Figure B); or
2) through a 5/8" hole below the monorail bracket of the front frame (Figure C)

9.3. One of the cables will have a BLACK STRIPE at the end of the cable next to the connection end. Connect the BLACK cable into the L port on the back of the monitor (Figure D). Connect the remaining unmarked cable into the R port.

IMPORTANT: Always power the monitor OFF after you connect the cables to reset.

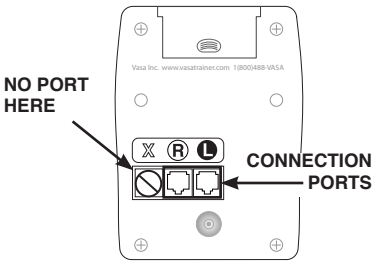


Figure A

Use L and R labeled ports only.
Do NOT use X port.

Figure B

Cables extending through cable channel ABOVE damper door.

Figure C

Cables extending through hole ABOVE cable channel.

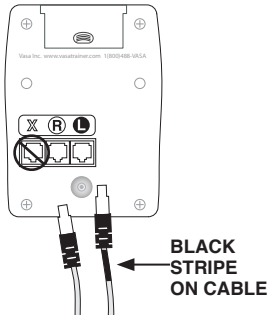


Figure D

Connect cable with the BLACK STRIPE to "L" port. Connect the other cable to "R" port.
DO NOT USE "X" PORT.

STEP 10: POSITIONING THE PERFORMANCE MONITOR

There are four mounting options based on the type of training you will be doing on your Vasa Ergometer. Review all the mounting options below to decide which will be the best location for your specific training needs. Specific installation instructions on the following pages.

A) SWIM - LOW MOUNT (Standard)

BEST LOCATION FOR: Swimmers & Surfers.
Ideal for workouts lying on the bench.

NOTE: Install on stem so the monitor can be adjusted (tilted) and secured for best viewing angle.

Installation Instructions for SWIM MOUNT: See STEP 10-A

1) SWIM LOCATION
Mounted Low on Stem

B) KAYAK - HIGH MOUNT

BEST LOCATION FOR: Kayak & Canoe paddlers.
Ideal for workouts sitting on the bench.

NOTE: Install on stem so the monitor can be adjusted (tilted) and secured for best viewing angle.

Installation Instructions for KAYAK MOUNT: See STEP 10-B

2) KAYAK LOCATION
Mounted High on Rail Stem

CAUTION: *Do NOT USE THIS MOUNT when performing workouts while lying on the bench. As the bench travels up the rail, you could damage the monitor or injure yourself.*

Can Alternate between these two mounts

C) MULTI-PURPOSE - ALTERNATING HIGH/LOW MOUNT

BEST LOCATION FOR: Various workouts (exaple: Swim & Kayak)
Ideal for a variety of workouts requiring both lying or sitting on the bench.

NOTE: Easily switch from High (Rail) Mount to Low Mount in seconds. Both locations allow for securing set angle for best viewing.

Installation Instructions for MULTI-ALTERNATING: See STEP 10-C

3) MULTI/ALTERNATING LOCATION
Mount either High or Low
(both on Stems)

D) MULTI-PURPOSE - FIXED MOUNT

BEST LOCATION FOR: Multiuser(s) with different needs.
Stationary/Fixed position that does not require any set-up.

NOTE: ***Least desirable location***. Angle of the monitor is fixed which will NOT allow you to adjust the tilt.

Installation Instructions for MULTI-FIXED: See STEP 10-D

4) MULTI - FIXED POSITION
Mounted Middle on Velcro

Detailed instruction for each monitor location to follow.

STEP 10-A: LOW POSITION MONITOR MOUNT

Best viewing angle for exercises done lying on the bench.
(Swim, Surf Paddling, etc.)

Figure A

Best position for Swimming, Surfing, etc. (lying on the bench)

You will be attaching the monitor to the monitor mounting stem located just above the damper door on the front ergometer assembly (Figure A). Cable wires should be coming out of cable channel above the damper door.

10A.1. First, attach the cables to the monitor as described in STEP 9.

NOTE: The monitor may automatically turn ON when the cables are connected. Before beginning your workout, turn the monitor OFF and wait a second or two until you hear a beep. Push the ON button to power back on and begin your workout.

10A.2. Next, you will attach the mounting ball (on back of monitor) to the mounting socket located just above the damper door. Before you attach the mounting ball, make sure the hose clamp is located on the neck of the mounting stem and not on the prongs of the socket (as in Figure B). Line up the mounting ball with the socket and push gently so that the two snap together.

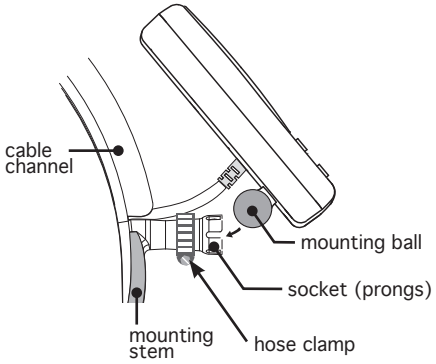


Figure B

Join mounting ball and socket together

10A.3. To secure the position of the monitor, bring the hose clamp over the socket prongs and tighten with your screw driver (Figure C). This step ensures the monitor will not move out of position while machine is in use. You may need to tighten periodically if the monitor is adjusted frequently.

10A.4. The monitor mounting stem is designed to allow for customized viewing. To adjust the ANGLE (tilted up and down, tilted right and left), use the ball and socket (Figure D). To move the POSITION (right side or left side), be sure to use the stem to slide the monitor right or left (Figure E).

IMPORTANT: *Do NOT slide the monitor to adjust Left and Right position. You will NOT have to loosen the Hose Clamp for any of these adjustments.*

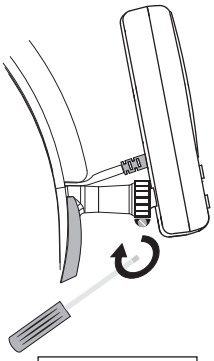


Figure C

Tighten hose clamp by turning "clockwise"

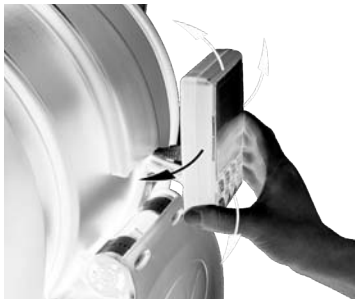


Figure D - adjusting ANGLE

adjust ANGLE by rotating on ball and socket. Do NOT slide left and right, use stem to slide

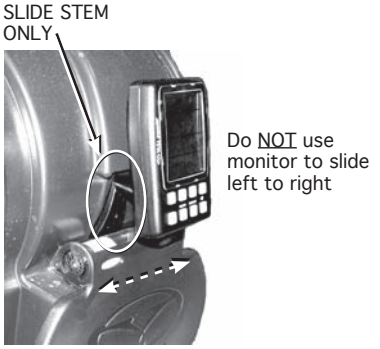


Figure E - adjusting POSITION

adjust POSITION of monitor by sliding stem Left & Right

STEP 10-B: HIGH POSITION MONITOR MOUNT

Best viewing angle for exercises done from seated or kneeling on bench. (Kayak, Canoe, Nordic Poling, Physical Therapy)

Figure A

Best position for Kayaking, Canoeing, etc. (sitting on the bench)

You will be attaching the monitor to the L-bracket that will be mounted to the monorail (Figure A). Cable wires must be routed through the center hole located 2 inches below the monorail bracket. This will provide optimal viewing of the monitor during kayak or canoe paddling workouts.

10B.1. Place the L-Bracket on the monorail **6 inches** from the metal monorail bracket (Figure B) with the mounting socket facing the bench.

10B.2. Wrap the Velcro cinch stap around the monorail, feed the Velcro through the buckle end, pull to tighten, and press Velcro down to fix L-bracket in place (Figure C).

10B.3. Attach the cables to the monitor as described in STEP 9. The cables will be on each side of the rail for this mounting system.

NOTE: The monitor may automatically turn ON when the cables are connected. Before beginning your workout, turn the monitor OFF and wait a second or two until you hear a BEEP. Push the ON button to power back on and begin your workout.

10B.4. Next, you will attach the mounting ball (on back of monitor) to the mounting socket on the L-bracket. Before you attach the mounting ball, make sure the hose clamp is located on the neck of the mounting stem and not on the prongs of the socket (as in Figure D). Line up the mounting ball with the socket and push gently so that the two snap together.

10B.5. To secure the position of the monitor, bring the hose clamp over the socket prongs and tighten with the provided screw driver (Figure E). You may need to tighten periodically if frequently adjusted.

10B.6. The monitor mounting stem is designed to allow for customized viewing. To adjust the ANGLE (tilted up and down, tilted right and left), use the ball and socket (Figure F).

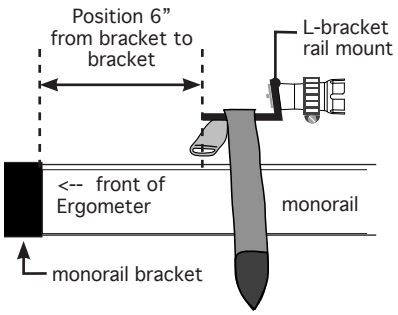


Figure B

Attach L-bracket to monorail. Cinch down Velcro strap to secure in place.

Figure C

L-bracket attached to monorail.

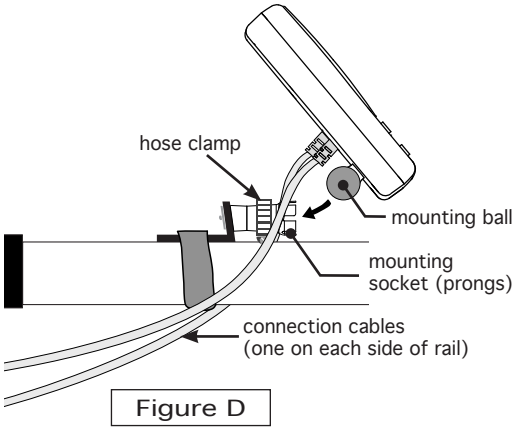


Figure D

Join mounting ball and socket together

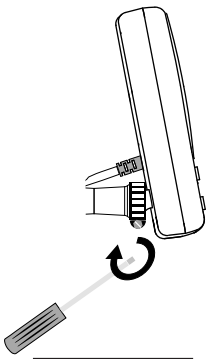


Figure E

Slide hose clamp over prongs & tighten clamp by turning "clockwise"

Figure F - adjusting ANGLE

Adjust ANGLE by tilting position of monitor. Clamp will hold desired angle.

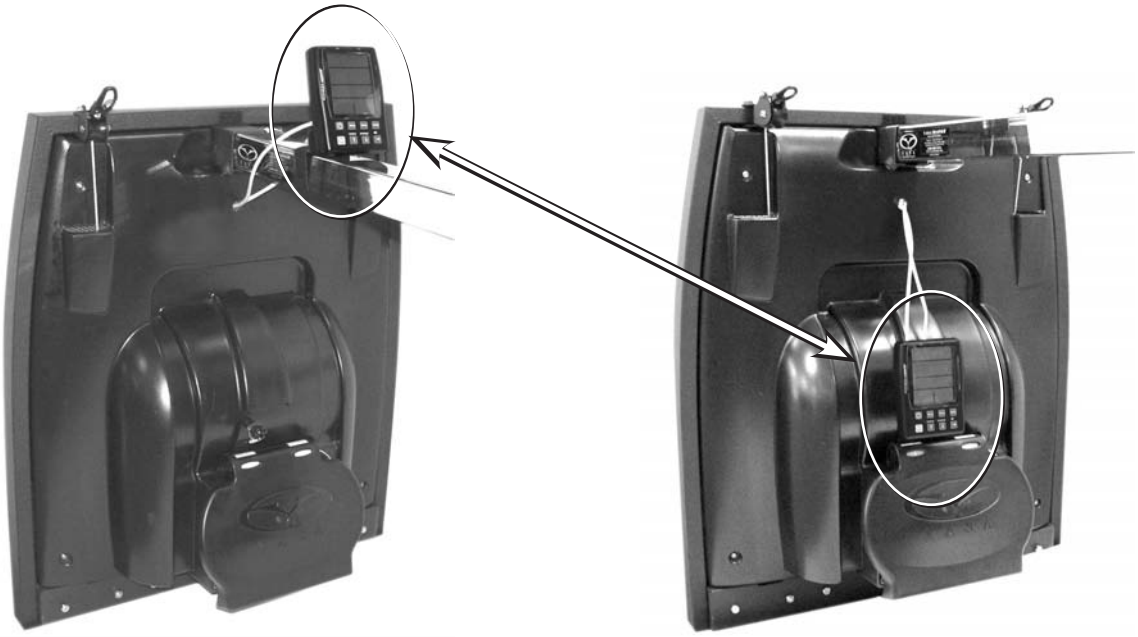
STEP 10-C: MULTI-POSITION MONITOR MOUNT

Best if you need to alternate between LOW and HIGH mounted positions frequently.

You will be attaching the monitor with either the L-bracket that is be mounted to the monorail (see STEP 10B) or a slight variation of the lower monitor stem mount (shown in STEP 10A). The cable wires be routed through the center hole located 2 inches below the monorail bracket. This will provide optimal viewing of the monitor for athletes looking to use their Vasa Ergometer for a variety of workouts.

10C.1. Follow all of the directions on the previous page (STEP 10B) for the installation of the L-Bracket and high monitor mount.

10C.2. To move the monitor location to the Low Mount, simply disconnect one cable, loosen the hose clamp, remove the monitor, move the monitor under the monorail. From that point, follow the rest of the directions in STEP 10A.2 on. You will now be able to quickly alternate the monitor between the higher and lower locations based on your sport specific workout.



Monitor mounted on monorail
(high mount).
Best viewing for Kayak & Canoe workouts.

Monitor mounted above damper door
(low mount).
Best viewing for Swim & Surf workouts.

STEP 10-D: MIDDLE POSITION MONITOR MOUNT

Best viewing angle for exercises done from seated or kneeling on bench.
(Kayak, Canoe, Nordic Poling, Physical Therapy)

CAUTION: *Vasa, Inc. does not recommend this mounting location for commercial use. Inexperienced users are more likely to cause damage to the monitor by accidentally letting go of the handles/paddles during a workout which could easily hit the monitor. The monitor is not warranted against damage caused by impact of any kind.*

Figure A

Multi-purpose use. Monitor stays in a stationary, fixed position.

You will be attaching the monitor directly to the rear plastic cover of the Front Assembly (Figure A). Cable wires will need to be routed through the center hole located 2 inches below the monorail bracket.

10D.1. Locate the battery hatch on the back of the monitor. Take one piece of the provided Velcro strip and remove the tape liner exposing the adhesive. Apply the adhesive side of the Velcro to the battery hatch. (Figure B). Press Velcro firmly to battery hatch so adhesive makes solid contact.

IMPORTANT: *Do NOT allow the Velcro strip to extend beyond the door as the adhesive is very aggressive and could prevent the battery hatch from opening.*

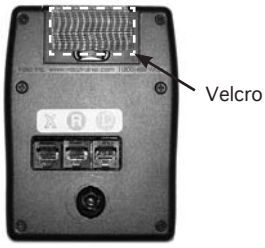


Figure B

Attach Velcro strip to monitor battery door region. Do NOT cover any moving region of the door.

10D.2. Next measure & mark the EXACT location on the rear cover of the Front End Assembly as shown in **Figure C** below. Remove the adhesive lining on the second Velcro strip and apply it to the marked location. Press Velcro firmly to cover so adhesive makes solid contact.

10D. 3. Allow adhesive to bond to cover for 30 minutes before next step.

10D. 4. Connect both cable connections to the monitor ports as described in STEP 9.

10D. 5. Join the two pieces of Velcro together by lining them up to one another and pushing them together firmly. They will snap into place (Figure D).

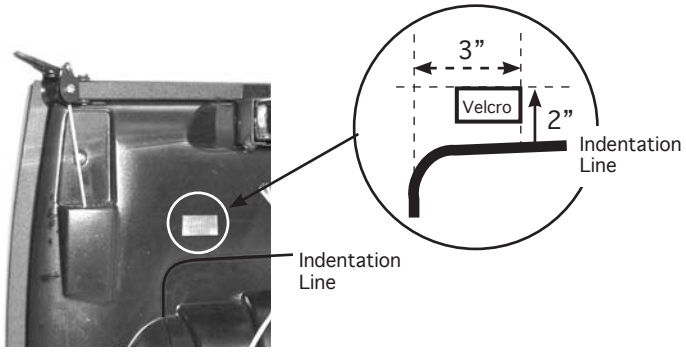


Figure C

Top right corner of Velcro is positioned 2” UP and 3” RIGHT from the indentation lines on the Front End Assembly.

Figure D

Multi-purpose use. Monitor stays in a stationary, fixed position.

1-3. POST ASSEMBLY SAFETY CHECKLIST

Please review the steps below to assure that your Vasa Ergometer is assembled correctly and ready for safe use (check if complete).

FRONT

1. ____ Button head screw and nut are assembled on front stanchion head and monorail.
2. ____ Socket set screw on front stanchion head is tightened against the monorail.

REAR (CHECK IF COMPLETE)

3. ____ Button head screw and nut are assembled on rear stanchion head and monorail.
4. ____ Socket set screw on rear stanchion head is tightened against the monorail.

BENCH / SEAT CARRIAGE (CHECK IF COMPLETE)

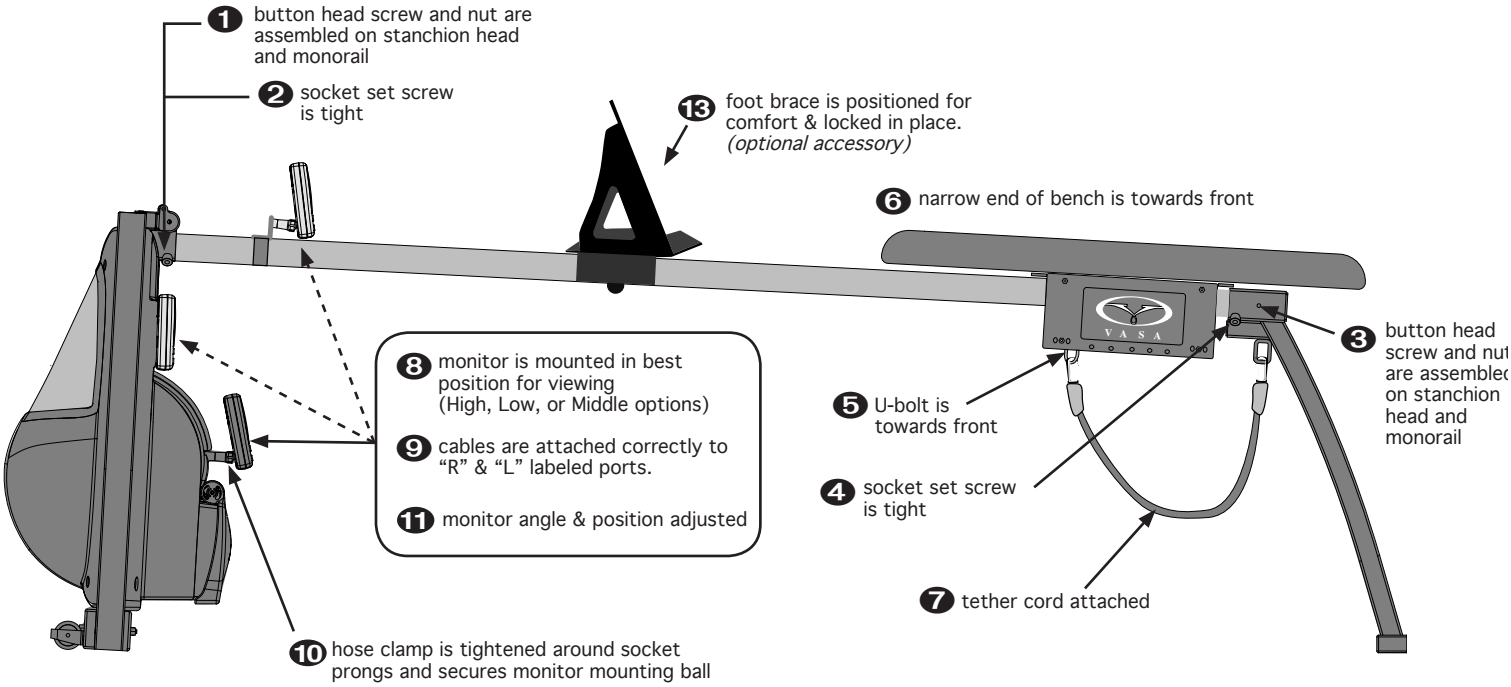
5. ____ U-bolt on the seat carriage is towards the front assembly.
6. ____ Narrower end of the bench is towards the front assembly.
7. ____ Tether cord is attached between rear stanchion and U-bolt on underside of seat carriage.

MONITOR (CHECK IF COMPLETE)

8. ____ Mounting location of the monitor provides optimal viewing for your workout needs.
9. ____ Connection cables are attached correctly to "R" and "L" labeled ports on the monitor.
10. ____ Hose Clamp is tightened around socket prongs (if applicable).
11. ____ Monitor is adjusted for best viewing (ANGLE and POSITION).

KAYAK KIT (OPTIONAL ACCESSORY)

13. ___ Foot Brace is locked securely in place and in the desired position on the monorail for comfort.


1 button head screw and nut are assembled on stanchion head and monorail
2 socket set screw is tight
13 foot brace is positioned for comfort & locked in place. (optional accessory)
6 narrow end of bench is towards front
3 button head screw and nut are assembled on stanchion head and monorail
8 monitor is mounted in best position for viewing (High, Low, or Middle options)
9 cables are attached correctly to "R" & "L" labeled ports.
11 monitor angle & position adjusted
5 U-bolt is towards front
4 socket set screw is tight
7 tether cord attached
10 hose clamp is tightened around socket prongs and secures monitor mounting ball

1.4 - RECORD ORDER INFORMATION

Now that you have completed the assembly, please take a minute to record some information found on your Vasa Invoice. This will allow us to service you better in the future. Please record:

INVOICE NUMBER: _____ DATE OF INVOICE: _____

If you have any questions at this point with the assembly, please contact us.

US customers, please call us toll-free at: 1 (800) 488-VASA
International customers, please call us at:: 1 (802) 872-7101
E-Mail: info@vasatrainer.com

PART 2 – USING THE VASA ERGOMETER

The following sections contain guidelines and tips for using your Vasa Ergometer, the performance monitor, and adjusting the resistance.

2.1. SAFE OPERATION

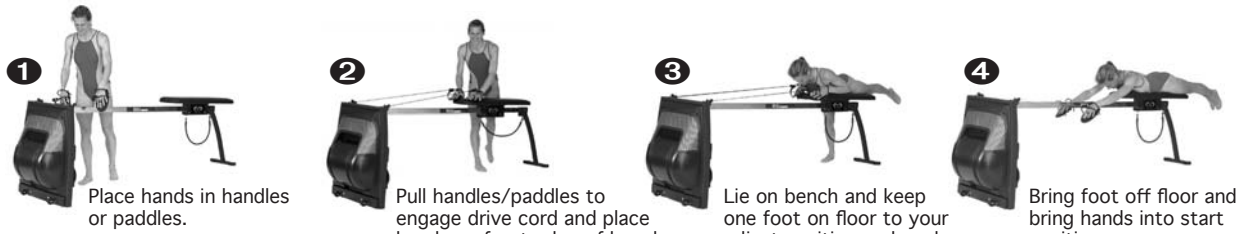
GETTING SAFELY ON AND OFF

Getting safely on and off your Vasa Ergometer is an important part of your program. Please follow the guidelines below.

CAUTION: *Do not suddenly release the paddles or handles while using the Ergometer. They could strike the monitor or front assembly and cause damage or injury. Always gently return the handles or paddles to the ready position on the front assembly.*

SWIM POSITION - Lying prone on the bench using swim paddles or exercise handles

1) Place your hands in the handles or paddles, then pull handles/paddles to engage the drive cord.
2) Walk towards bench, placing your hands at the top of bench.
3) Lie on the bench so that your chest is even with the front of the bench, keep one foot on floor until you are positioned comfortably.
4) Bring your foot off the floor, then bring hands into start position.

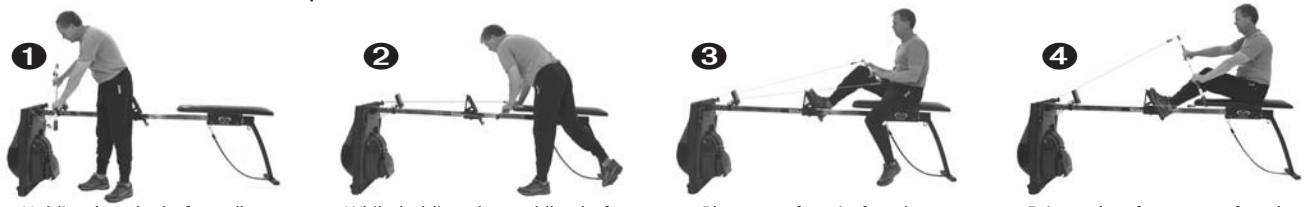


1. Place hands in handles or paddles.
2. Pull handles/paddles to engage drive cord and place hands on front edge of bench.
3. Lie on bench and keep one foot on floor to your adjust position on bench.
4. Bring foot off floor and bring hands into start position.

KAYAK POSITION - Sitting on the bench facing forward, using the kayak shaft

NOTE: position the bench & seat carriage so it touches the rear stanchion. Be sure the foot brace has been installed. For Kayak Set-up Instructions (see page 10).

1) Take the kayak paddle shaft in both hands and walk back to the bench.
2) While holding the paddle shaft, place your hands on the front of the bench holding the bench steady. Swing one leg over the bench and sit down just behind the Vasa logo located on the front part of the bench (middle of bench).
3) Bring one foot up and place it in the locked foot brace. Adjust your leg position by sliding forward or backward on the bench so you are comfortable.
4) Bring your second foot up into position and bring the kayak shaft into position. Your hands should be shoulder width apart.



1. Holding kayak shaft, walk back to end of bench.
2. While holding the paddle shaft, place hands on front edge of bench as swing leg over. Sit just behind Vasa logo.
3. Place one foot in foot brace. Adjust seated position for comfort.
4. Bring other foot up to foot brace and bring kayak shaft into start position.

GETTING SAFELY ON AND OFF - CONTINUED

OTHER POSITIONS - using handles or ankle straps

SITTING FACING FORWARD

Straddle bench, then sit on bench. Bring hands into position.

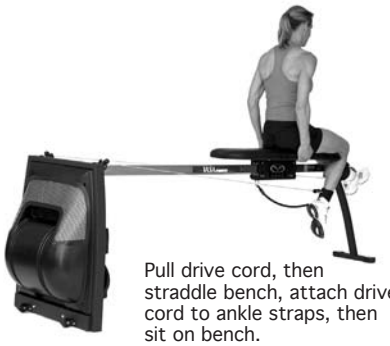
KNEELING FACING FORWARD

Straddle bench, steady bench with knuckles as you kneel. Bring hands into position.

SITTING FACING BACKWARD

Straddle bench, then sit on bench. Bring hands into position.

USING ANKLE STRAPS FACING BACKWARD



Pull drive cord, then straddle bench, attach drive cord to ankle straps, then sit on bench.

CAUTION: *Do not pull the drive cord past the end of the ergometer. This could result in damage to the Ergometer.*

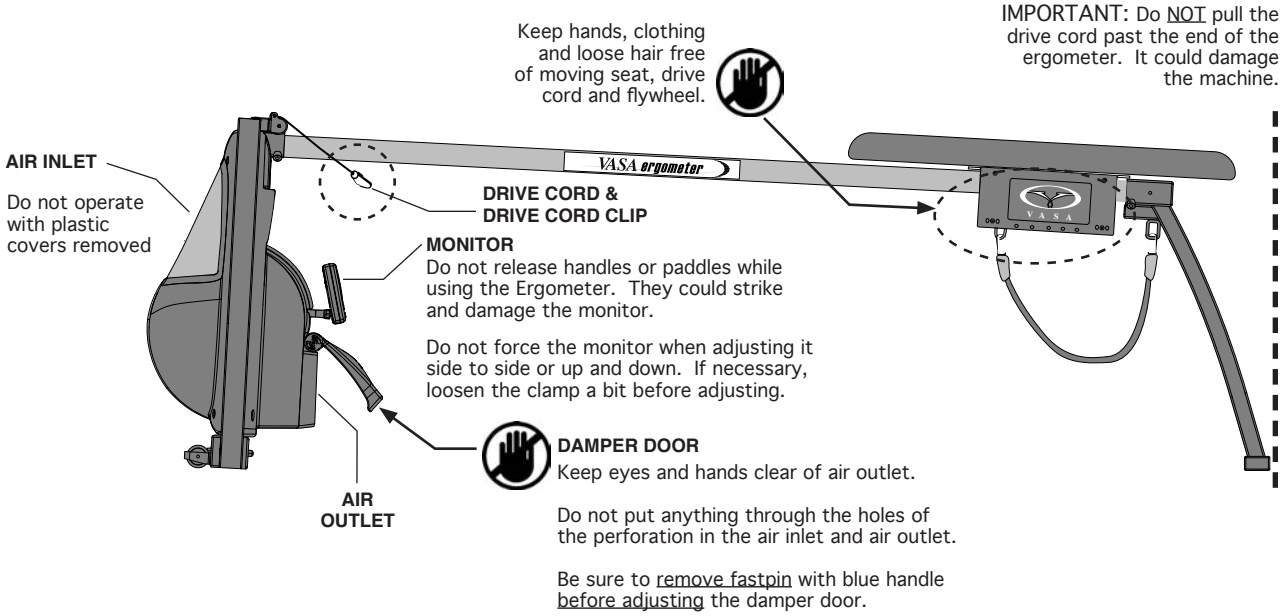
CAUTION: *Do not suddenly release the paddles or handles while using the Ergometer. They could strike the monitor or front assembly and cause damage or injury. Always gently return the handles or paddles to the ready position on the front assembly.*

SAFETY REMINDERS

It's very important to use common sense and adhere to these safety guidelines in order to avoid injury to yourself or damage to your Vasa Ergometer. The next few pages review several areas of safety. The following is a "pre-flight" safety check you should do before using your Vasa Ergometer:

- DO NOT LET GO OF THE HANDLES, SWIM PADDLES OR PADDLE SHAFT while the drive cords are extended - they could hit and damage your monitor which is NOT covered under warranty. Always return the handles or paddles slowly to the ready position on the front assembly.
- Follow instructions on the previous page for safely getting on and off the Vasa Ergometer.
- Always instruct bystanders, especially children, to keep totally clear while Ergometer is in use, especially of the moving seat carriage, drive cords and flywheel. Avoid wearing loose or slippery clothing. Always tie up long hair so it's clear of moving parts on the machine.
- Keep eyes and hands clear of the air outlet below the damper door. To avoid blowing dust into the air, eyes or into the electronics, do not operate in a dusty area.
- Do not operate if the plastic covers on the front assembly are removed.
- Do not pull the drive cords past the end of the Vasa Ergometer. If the drive cords becomes difficult to pull (like the cord is stuck), do not continue to pull as this may damage your Ergometer.
- Perform proper maintenance on your Vasa Ergometer as recommended in "Part 5 - Maintenance & Troubleshooting".

IMPORTANT: *Do not release the paddles or handles while using the Ergometer. They could strike the monitor or front assembly and cause damage or injury. Always return the handles or paddles slowly to the ready position on the front assembly.*


Keep hands, clothing and loose hair free of moving seat, drive cord and flywheel.
IMPORTANT: Do NOT pull the drive cord past the end of the ergometer. It could damage the machine.
AIR INLET
Do not operate with plastic covers removed
VASA ergometer
DRIVE CORD & DRIVE CORD CLIP
MONITOR
Do not release handles or paddles while using the Ergometer. They could strike and damage the monitor.
Do not force the monitor when adjusting it side to side or up and down. If necessary, loosen the clamp a bit before adjusting.
DAMPER DOOR
Keep eyes and hands clear of air outlet.
AIR OUTLET
Do not put anything through the holes of the perforation in the air inlet and air outlet.
Be sure to remove fastpin with blue handle before adjusting the damper door.

SUPERVISING CHILDREN

We recommend supervising children at all times while using the Vasa Ergometer. Please review the **Safety Reminders** and **Getting On and Off Safely** in this section with all children who will use the Vasa Ergometer. In particular, we recommend the following:

1. Children should train with or be instructed by a parent or coach whenever possible. This will help reduce the chance of injury. It also can be more motivating and fun.
2. Instruct user's, especially children, to NEVER LET GO OF THE HANDLES SWIM PADDLES, OR KAYAK SHAFT while using the Vasa Ergometer to protect the monitor from being damaged. Keep hands on the handles, swim paddles or kayak shaft until the workout is complete. Return the handles/ paddles/shaft slowly to the ready position on the front assembly (see page 22).
3. Instruct all bystanders to stay clear of the Ergometer while in use, especially of the moving seat carriage, drive cords and tether cords. Avoid wearing loose clothing and always tie up long hair.
4. Keep eyes and hands clear of the air outlet below the damper door. To avoid blowing dust into the air or into the electronics, do not operate in a dusty area.
5. Do not pull the drive cords past the end of the Vasa Ergometer. If the drive cords stops pulling, do not continue to pull as this will damage your Ergometer.

SECURING YOUR VASA ERGOMETER IN A PUBLIC SETTING

If your Vasa Ergometer is left in a public area, you may wish to "secure or vandal-proof" it to avoid unauthorized use. We recommend the following:

1. Remove any drive cord attachment (swim paddles, handles, or kayak shaft) and tether cords. Store these and any other accessories in a secure place.
2. To deter unwanted use and protect your investment, keep your Vasa Ergometer covered when not in use. **Vasa Ergometer Covers** are available at www.vasatrainer.com and in the back of this manual.
3. You may wish to unplug and remove the electronic monitor for safe keeping. See "Part 1 - Step 8" and follow instructions in reverse order to detach.
4. Use a cable and lock between the D-ring on the rear stanchion head and the U-bolt on the underside of the seat carriage. This will lock the bench in a fixed position.
5. Store the Vasa Ergometer in a dry, secure room or closet. Avoid storing the Vasa Ergometer in a humid, chlorine or salt-air environment.

MEDICAL CLEARANCE - See your Doctor before beginning any exercise program.

CAUTION: Before exercising with the Vasa Ergometer or any other form of exercise, please check with your physician first. This is especially important if you are overweight, if you have been inactive for awhile, if you have injuries, or if you have any history of heart disease in your family. If you are over 35, it's a good idea to perform an exercise stress test with a qualified physician before you begin training. Training with the Vasa Ergometer can be vigorous and demanding. We suggest that you be in good health to achieve the best results.

2.2. SETTING THE RESISTANCE ON THE VASA ERGOMETER

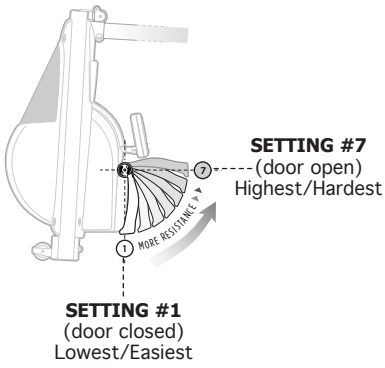
The flywheel and the damper door work in concert to affect the resistance you will feel using the Vasa Ergometer. Tether cords are used to restrict the distance the bench travels on the monorail, and are not intended as resistance cords.

FLYWHEEL

The airflow resistance of the flywheel simulates the resistance of water - the harder you pull, the more resistance you feel.

DAMPER DOOR

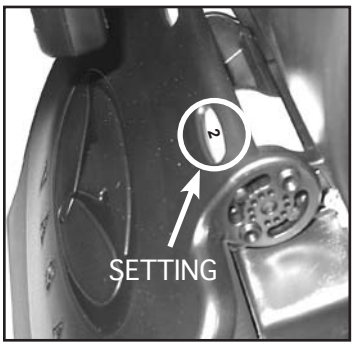
You can adjust the airflow resistance by changing the opening of the damper door on the front of your Vasa Ergometer. The lowest setting "1" (door fully closed) provides the least resistance and setting "7" (door fully open) provides the most resistance. Setting #1 is similar to going WITH the current and Setting #7 is similar to going AGAINST a strong current.



To adjust the damper door, pull/push the bottom of damper door to the desired setting (1-7) indicated in the window on the top of the door (Figure A). The ratchet hinge will keep the damper door in place.

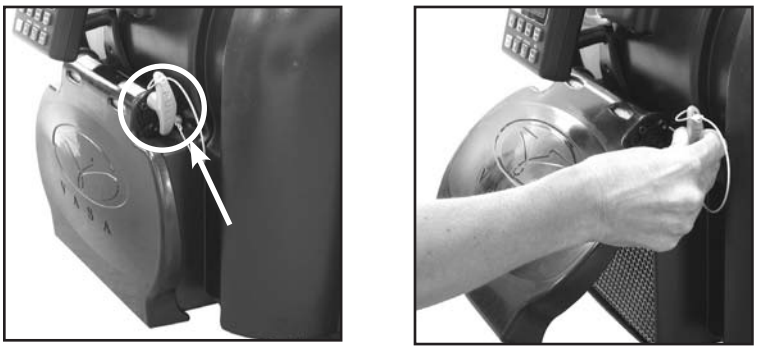
OPTIONAL: The blue fastpin locks the damper door at the chosen setting (Figure B). This is optional as the damper door will not move when the fastpin is not inserted.

Figure A



Damper door setting identification window

Figure B



OPTIONAL: you may wish to use the blue fastpin on top right of damper door. This pin will lock the damper door at desired setting but is not requireed.

DAMPER DOOR SETTINGS RELATING TO POWER AND FORCE OUTPUT

At high settings (5, 6, 7) it feels like swimming against a current. At low settings (1 & 2) it feels more like swimming with a current. So if you select a setting of 1, you will have to move your arms faster than your normal speed in still water to generate the same power (faster stroke rate). If the you select a setting of 7, you will have to move your arms slower than your normal speed in still water to generate the same power (slower stroke rate).

Mathematically, this is expressed by the equation Power = Force x Velocity. The fan resistance determines the force (a higher setting is a higher force) and the hand speed is the velocity. So the same power can be achieved with either a high resistance setting combined with a low hand speed or a low resistance setting combined with a high hand speed. As you would expect, there will be a setting where an individual can produce the maximum power due to physiological and biomechanical efficiency, and this setting will likely be different depending on the individual's body and training. The monitor calculates power by sampling the force and hand speed many times per second throughout the stroke. Therefore it calculates power produced & distance swam precisely regardless of the damper door setting. This allows users to choose a damper door setting according to personal preference.

It is important to remember that the damper door setting is subjective, depending on body type, conditioning level, and stroke technique. We think that most distance swimmers excel at the low to mid range damper settings (either 2, 3 or 4).

Suggestion: once per week for one month do a 500 meter or a 1000 meter time trial at race pace & race stroke rate. On week one, set the damper at 2, for week 2, set it at 3 and so on. You'll discover the damper door setting that allows you to perform your best for that distance. Measure your heart rate, watts, and time. Monitoring these will help you arrive at the most efficient stroke rate, technique and heart rate to sustain the power and pace you need to improve. NOTE: Use the "Audible Stroke Rate Tempo Beeper" to help swim at your desired stroke rate. For full details on the Audible Tempo Beeper, continue to the section on Monitor Operation.

TETHER CORDS

The tether cords that come with your Vasa Ergometer are designed to prevent the seat from rolling too far forward. The user will be able to complete a full range of motion without their hands hitting the front pulley brackets. Tether cords come in 2 types: medium and hard (thicker). Which tether cord you choose depends on the amount of power you will generate and the damper door setting you select. In general, as you increase the setting on the damper door, you would attach a thicker cord.
NOTE: allowing the bench to roll freely on the monorail can provide a useful "treadmill affect", where by the user will notice a drop in average power because the bench will roll backwards.

ANCHOR BENCH TO PREVENT MOVEMENT

If you prefer to keep the bench from rolling on the monorail, you can use a range of motion knob (Figure A) or by using a locking strap to anchor to rear stanchion (Figure B).

NOTE: The ROM KNOB KIT is an additional accessory (part# ROM KNOB KIT). Locking straps are available at most hardware stores.

Figure A

ROM KNOB KIT
$10 + shipping
May only be installed on aluminum monorails.

Figure B

LOCKING STRAPS
Available at most hardware stores.

Typical tie down strap found at most hardware stores or by contacting

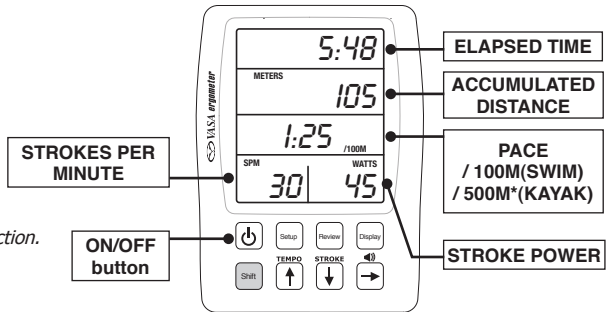
2.3. VASA ERGOMETER MONITOR OPERATION

The monitor gives you the opportunity to get instant feedback on your performance. You can measure time, distance, pace, stroke rate, stroke power (watts), and applied force for each arm (Figure A). Having this information allows you to:

- monitor your progress
- create repeatable performance testing & training
- set up workouts based on time & distance
- perform intervals or distance training
- simulate races
- analyze force for right and left arms

Specifics on how the monitor calculates this data can be found at the end of this section.

Figure A



GETTING STARTED

The monitor will need to obtain a signal from the Load Cells (located on the inside of the machine) each time it is turned on. The monitor will then use that data to establish a "zero" force level for that workout. If you install the connection cables when the monitor is "ON", make sure to RESET the monitor so it can calibrate correctly. To RESET the monitor, power it OFF by pushing the ON/OFF button. When you turn it back on, again using the ON/OFF button, it will now be calibrated to the Load Cells.

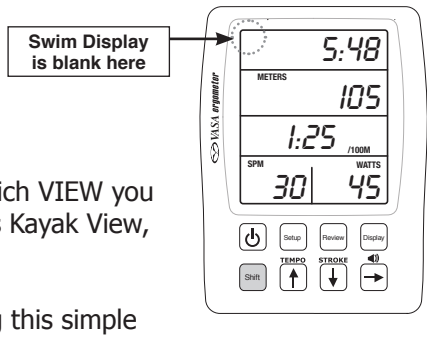
As soon as you pull on the drive cords, the monitor will automatically turn on and begin monitoring your performance. You can reset the monitor using the ON/OFF button (Figure A).

VIEWING OPTIONS: SWIM VS. KAYAK

There are two main views you can choose from on the monitor each providing data relative to that sport. The two views are:

- SWIM VIEW
- KAYAK VIEW

Figure B

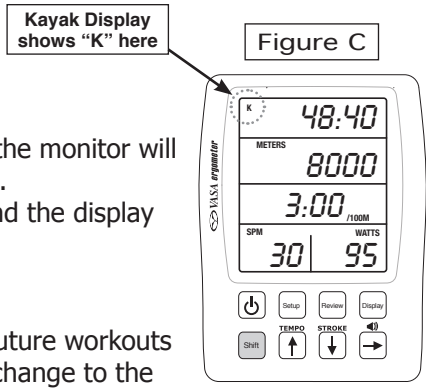


The upper left corner of the top screen (elapsed time) will denote which VIEW you are in. If it is in Swim View, that area will be blank (Figure B). If it is Kayak View, you will see a "K" displayed in the upper left corner (Figure C).

The monitor can be changed between these two different views using this simple sequence:

Step 1: Begin with the monitor OFF.
Step 2: Hold the SHIFT button and then press the ON/OFF button. Release buttons and wait for LCD test sequence to finish.
Step 3: Hold the SHIFT and then press the ON/OFF button again so the monitor will display load cell parameters (for Vasa use). Release buttons.
Step 4: Hold the SHIFT and press SETUP button. Release buttons and the display will turn off (you will hear a short beep).
Step 5: Turn ON for the new view.

Figure C



The monitor will remain in the selected view (Swim or Kayak) for all future workouts until you change it back. Repeat the sequence above if you want to change to the other view.

***PACING NOTE:** In the Kayak View, the monitor will calculate PACE/**500M**. Swim View is always displayed in PACE/100M.

MODES: BASIC VS. STROKE

There are two main display modes on the monitor: BASIC MODE and STROKE MODE (Figure D and E). When the monitor is first turned on, it will automatically enter Basic Mode. Both Basic Mode and Stroke Mode give you readings on ELAPSED TIME, STROKE RATE (strokes per minute), and STROKE POWER (watts). The remaining fields are "sub-displays" that change by pressing the "Display" button. For more information on Basic Mode, Stroke Mode and their sub-displays, see the next two pages.

To get into STROKE MODE, press and hold the blue "Shift" button, then press and release the "Down Arrow" button (below "STROKE" - see Figure E). To return to BASIC MODE, press and hold the blue "Shift" button, then press and release the "Down Arrow" button.

Figure D - BASIC MODE

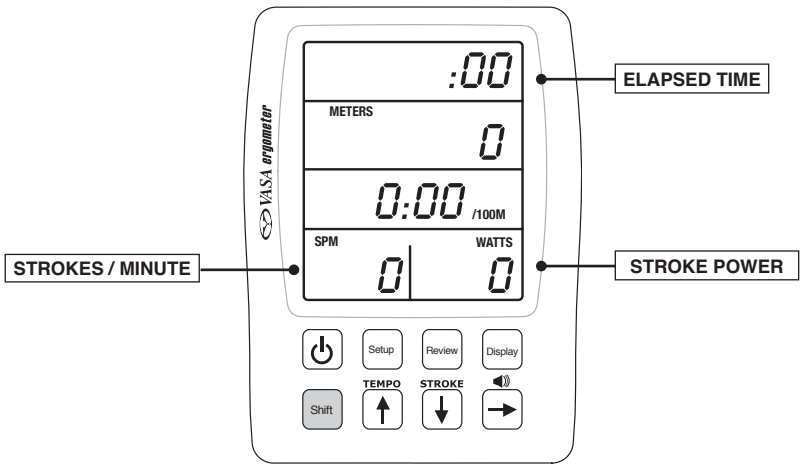
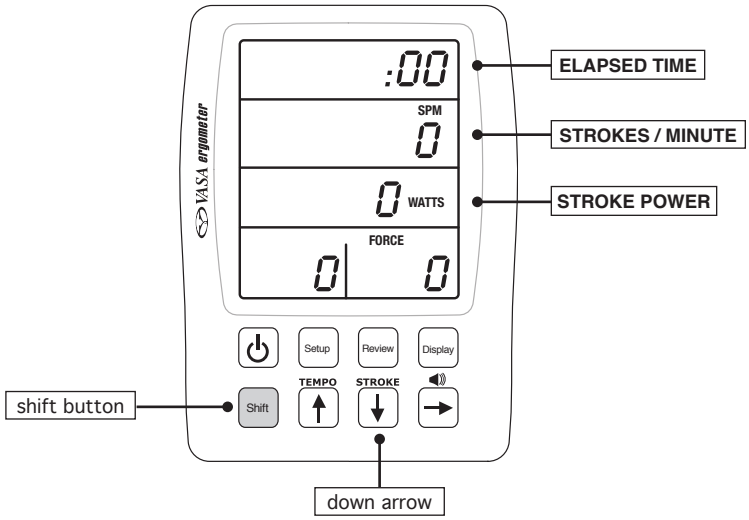


Figure E - STROKE MODE

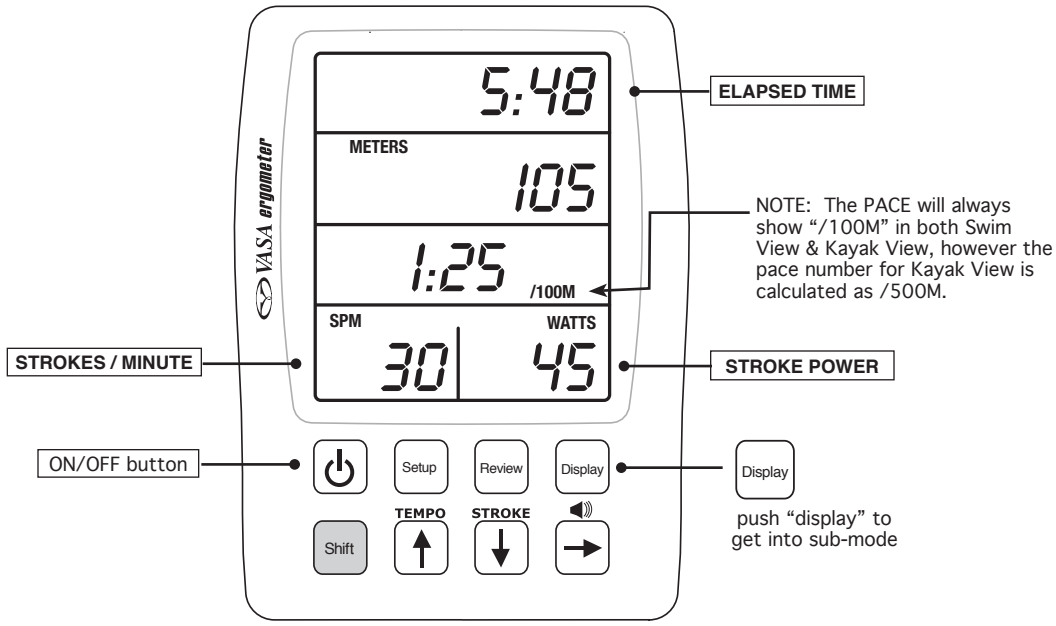


BASIC MODE

Basic Mode has three sub-displays PACE, POWER, and CALORIES. These sub-displays give you more specific information about your pace, your average power and the calories burned. You can choose these sub-modes by pressing the "Display" button (Figure D) on the monitor keypad. Each time the Display button is pressed the display changes to the next mode. This can be done at any time without affecting the operation of the monitor.

The top and bottom fields will always display the same information in all of the three sub-displays. The two middle fields will change as you press the "Display" button. The top field is ELAPSED TIME, the bottom left field is STROKE RATE in strokes per minute, and the bottom right field is STROKE POWER (in watts) for the last stroke (Figure D).

Figure D



NOTE: If the monitor senses the fan wheel is idol for 10 seconds, the monitor will "power down" and you will loose your workout data. If you choose to PRE-SET YOUR TIME or DISTANCE, the monitor will continue to retain data (see page 32 for full details).

BASIC MODE SUB-DISPLAYS (pace, power, calorie)

Note: In all of the sub-displays, the top, bottom left and bottom right fields always display the same information. Only the two middle fields will change as you press the "Display" button.

BASIC MODE > PACE (Figure E)
In the pace display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: TOTAL METERS since start of workout
Third: PACE per 100 METERS* for the last stroke (Swim)
Bottom Right: STROKE POWER (watts) for the last stroke
Bottom Left: STROKE RATE in strokes per minute

* IN KAYAK VIEW: the monitor will calculate PACE /500M even though it is denotes it as /100M on the screen.

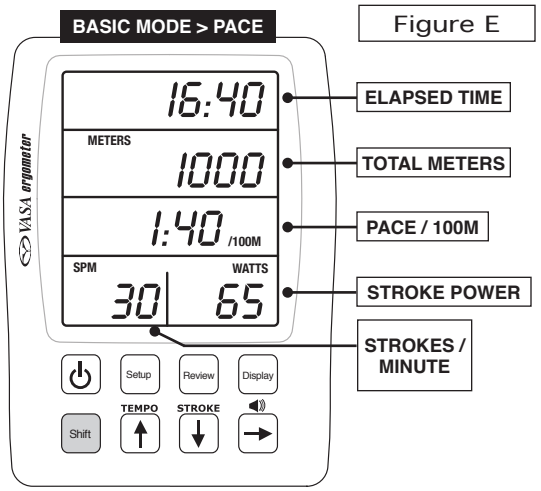


Figure E

BASIC MODE > POWER (Figure F)
In the power display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: AVERAGE POWER in watts since start
Third: PACE per 100 METERS* for the last stroke
Bottom Right: STROKE POWER (watts) for the last stroke
Bottom Left: STROKE RATE in strokes per minute

* IN KAYAK VIEW: the monitor will calculate PACE /500M even though it is denotes it as /100M on the screen.

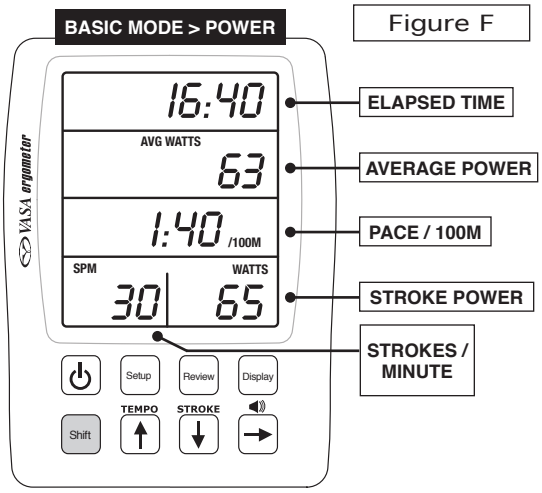


Figure F

BASIC MODE > CALORIE (Figure G)
In the calorie display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: TOTAL CALORIES since start of workout
Third: AVG CAL / HOUR for the last stroke
Bottom Right: STROKE POWER (watts) for the last stroke
Bottom Left: STROKE RATE in strokes per minute

*****For more information on meters and pace, see the end of this section.

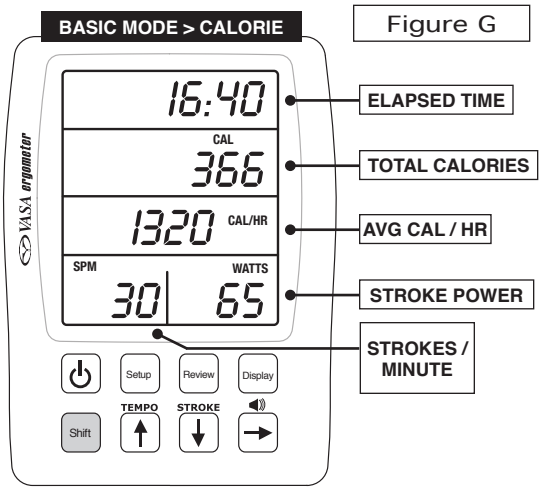


Figure G

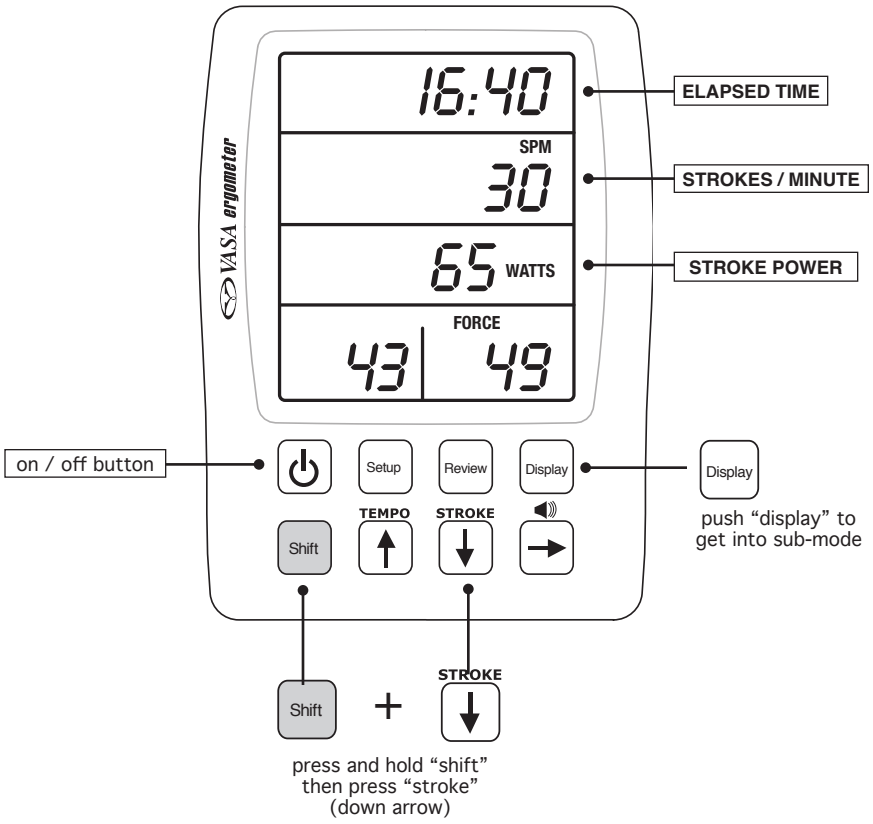
STROKE MODE

Stroke Mode gives you more specific information about each stroke, and shows information for the left and right strokes separately. To get into STROKE MODE, press and hold the blue "Shift" button, then press and release the "Stroke" (down arrow) button (Figure H).

Stroke Mode has three sub-displays: AVERAGE FORCE, MAXIMUM FORCE, and STROKE LENGTH. You can choose these sub-modes by pressing the "Display" button on the monitor keypad (make sure you are in stroke mode first - see above). Each time the Display button is pressed the display changes to the next mode. This can be done at any time without affecting the operation of the monitor.

When in Stroke Mode, the top three fields always display the same information (the bottom left and right fields will change as you press the "Display" button). The top field is the ELAPSED TIME since the start of exercise, the second field is the STROKE RATE in strokes per minute, and the third field is the STROKE POWER (in watts) for the last stroke (Figure H).

Figure H



STROKE MODE SUB-DISPLAYS (average force, max force, stroke length)

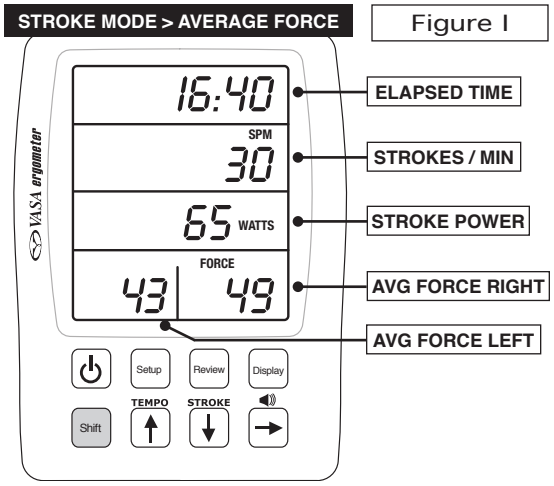
Note: In all of the stroke mode sub-displays, the top three fields always display the same information. Only the bottom left and right fields will change as you press the "Display" button.

STROKE MODE > AVERAGE FORCE (Figure I)

In the average force display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: STROKE RATE in strokes per minute
Third: STROKE POWER (watts) for the last stroke
Bottom Right: AVERAGE FORCE[1] for right side
Bottom Left: AVERAGE FORCE[1] for left side

[1]AVERAGE FORCE: measures the force applied during the power portion of each stroke. The force is displayed in units of Newtons: (1 LB = 4.45 Newtons; 1 Newton = 0.225 LBs).

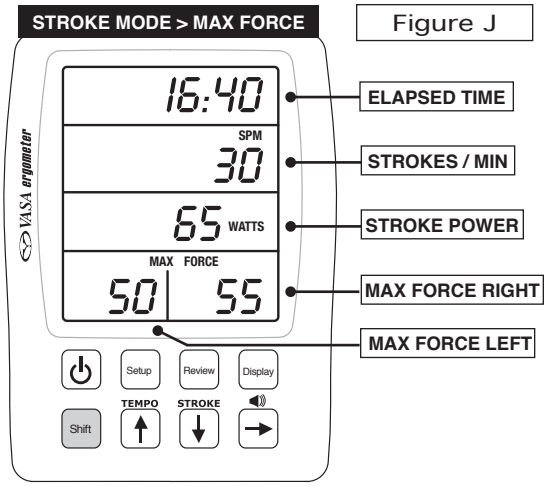


STROKE MODE > MAX FORCE (Figure J)

In the max force display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: STROKE RATE in strokes per minute
Third: STROKE POWER (watts) for the last stroke
Bottom Right: MAX FORCE[2] for right side
Bottom Left: MAX FORCE[2] for left side

[2]MAX FORCE: measures the maximum force applied at any instant during each stroke. The force is displayed in units of Newtons: (1 LB = 4.45 Newtons; 1 Newton = 0.225 LBs).

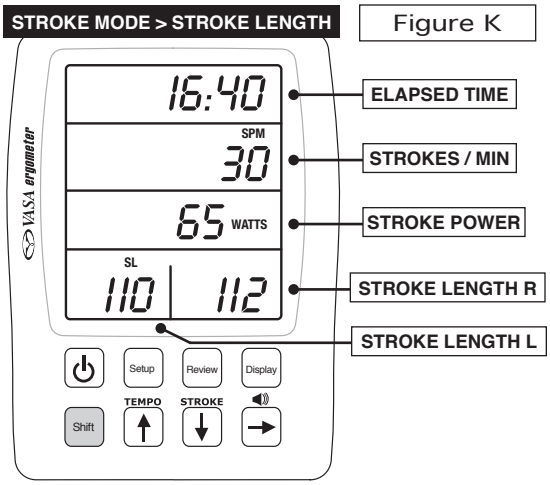


STROKE MODE > STROKE LENGTH (Figure K)

In the stroke length display, the fields are as follows:

Top: ELAPSED TIME since start of workout
Second: STROKE RATE in strokes per minute
Third: STROKE POWER (watts) for the last stroke
Bottom Right: STROKE LENGTH[3] for right side
Bottom Left: STROKE LENGTH[3] for left side

[3]STROKE LENGTH is measured in centimeters.



VM MONITOR - SPECIAL FUNCTIONS

SETTING UP A PRE-SET WORKOUT DISTANCE

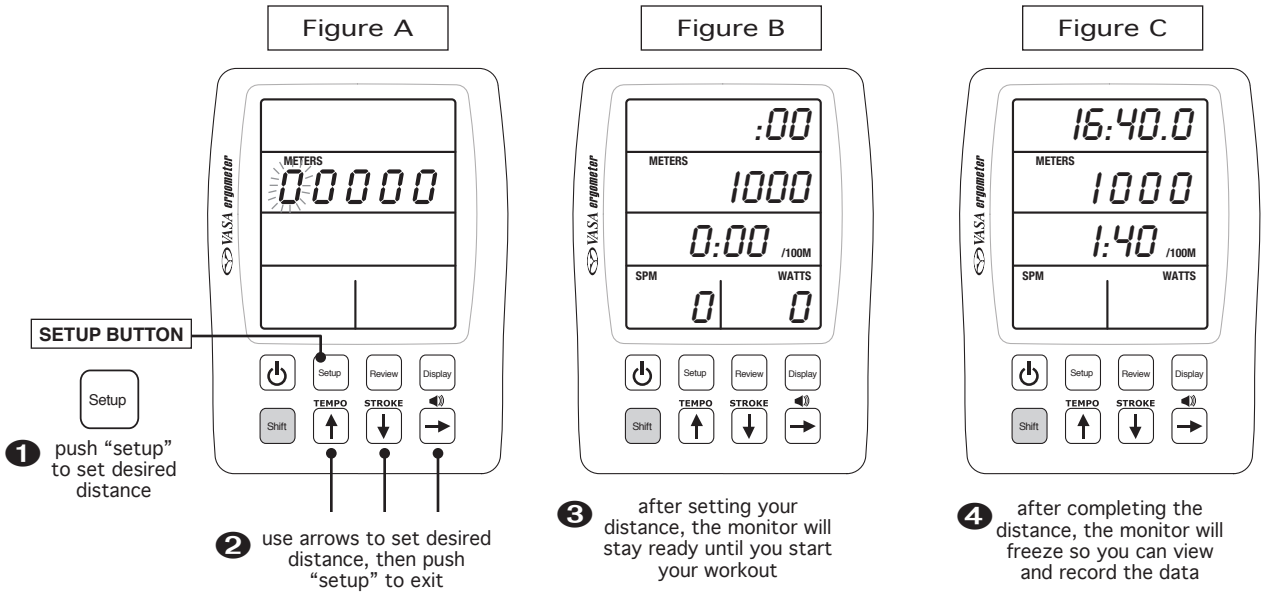
You can pre-set a distance (in meters) for your workout, and the VM monitor will countdown the distance and display the total time to achieve that distance.

To set the desired distance, push the "SETUP" button (you must be in BASIC MODE). The left most number will be flashing (Figure A). Use the up ↑ or down ↓ arrows to change the flashing number. To move to the next number, use the right → arrow.

Once you have set the desired distance, press "SETUP" to exit. The monitor will then wait until you begin your workout to start counting (Figure B).

When the pre-set distance is completed, the monitor will freeze so you can record the data (Figure C). (After 5 minutes of inactivity, the monitor will auto shut off.) To begin again or to reset the distance, press "SETUP" twice.

NOTE: The monitor will default to BASIC > Pace Mode. To change to BASIC > Calorie, or BASIC > Power, press the "Display" button.



USING THE MONITOR CLOCK FOR INTERVAL TRAINING, RACE SIMULATIONS AND TIMED PIECES

You can use the VM monitor to do interval training, race simulation and set distance workouts. Set your desired interval distance as described above. Immediately after you have completed the first set, press the setup button twice (the flywheel must still be spinning). You can then watch the clock for your desired recovery or rest period. When you are ready for the next set, press the setup button twice to begin timing your next interval. (Of course, you can always use your own watch or pace clock to time rest periods between intervals.)

SETTING UP WORKOUT INTERVALS: *preset distance or time with rest interval*
for interval training, race simulations and distance workouts

You can use the VM monitor to do interval training, race simulation and pre-set distance workouts. You can pre-set a DISTANCE (in meters) or a TIME (in minutes/seconds) for your workout. For interval training you can pre-set a REST INTERVAL between your exercise intervals. The VM monitor will countdown the distance or time and rest intervals. When the workout is complete, the VM monitor will display the total time and distance covered. If you want to pre-set SPLITS and REVIEW each interval, see "Setting Split Times" and "Workout Review" on page 33.

INTERVAL TRAINING: *pre-set distance with rest interval*

❶ To set the desired distance, press the "SETUP" button. The first display will be DISTANCE (Figure A). With DISTANCE in the display (Figure A), use the up ↑ down ↓ and right → arrows to change the flashing number to the desired distance.

Note: you must be in BASIC MODE to program intervals. After pressing "SETUP", press "DISPLAY" to toggle between DISTANCE, REST TIME for distance intervals, TIME, and REST TIME for time intervals.

After setting the desired distance, ❷ press "DISPLAY" to set the REST interval. With REST in the display (Figure B), use the arrows to set the desired rest time. Once you have set the desired workout, ❸ press "SETUP" to exit.

As soon as you pull on the drive cords the monitor will start counting down the distance (Figure C). When the first distance interval is completed, the monitor will countdown the rest interval (Figure D). When the rest interval is complete, the monitor will stay ready for the next distance interval (Figure C).

When you have completed your workout, you can review all intervals by pressing "REVIEW" (see "Workout Review" on p. 35). Press the up/down arrows to see the next interval.

NOTE: To pre-set splits for your interval workout, see "Setting Split Times / Distances" on p. 35.

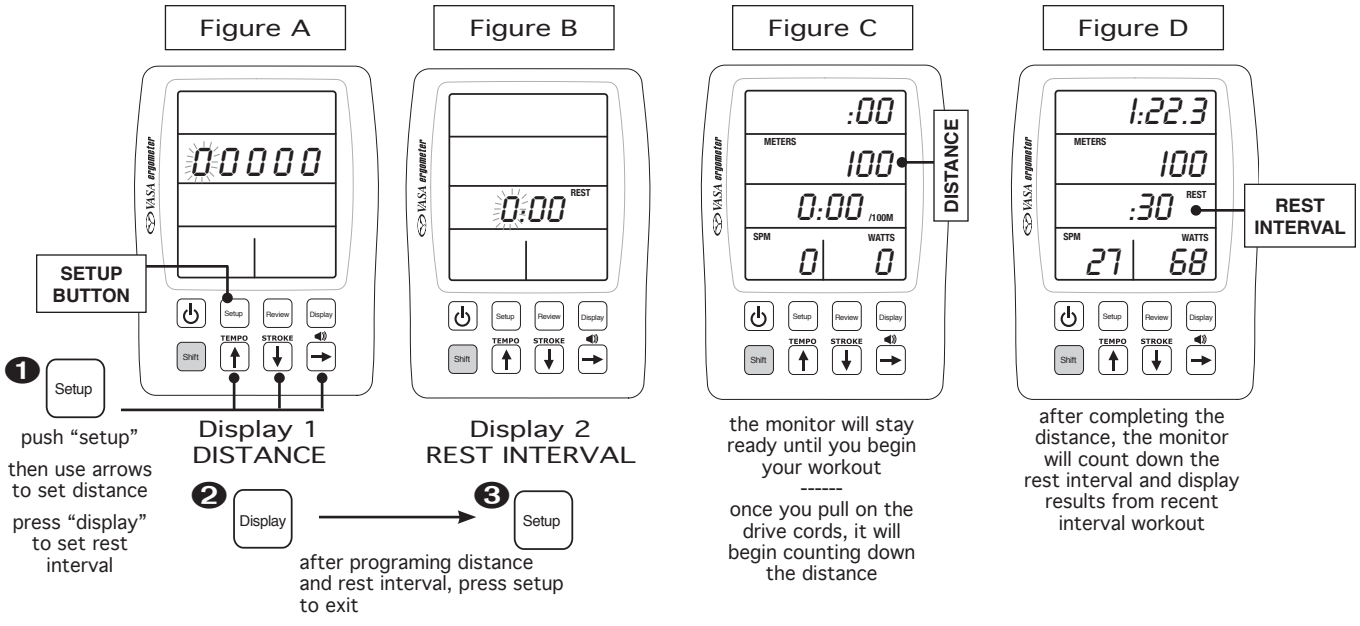


Figure A
Figure B
Figure C
Figure D
SETUP BUTTON
❶ Setup
push "setup"
then use arrows to set distance
press "display" to set rest interval
Display 1
DISTANCE
Display 2
REST INTERVAL
❷ Display
❸ Setup
after programing distance and rest interval, press setup to exit
DISTANCE
REST INTERVAL
the monitor will stay ready until you begin your workout
---
once you pull on the drive cords, it will begin counting down the distance
after completing the distance, the monitor will count down the rest interval and display results from recent interval workout

INTERVAL TRAINING: *pre-set time with rest interval*

❶ To set the desired time, press the "SETUP" button, then press "DISPLAY" (twice) until time is displayed in the top field (Figure A). Use the arrows to change the flashing number to the desired time.

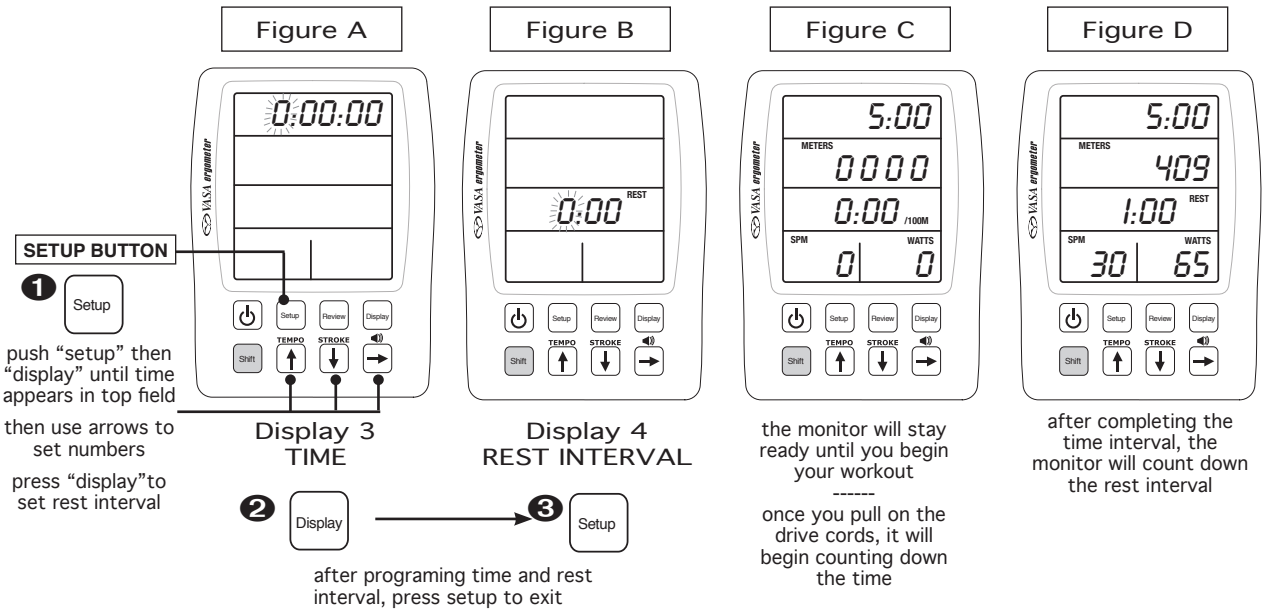
Note: you must be in BASIC MODE to program intervals. After pressing "SETUP", press "DISPLAY" to toggle between DISTANCE, REST TIME for distance intervals, TIME, and REST TIME for time intervals.

After setting the desired time, ❷ press "DISPLAY" (once) to set the REST interval. With REST in the display (Figure B), use the arrows to set the desired rest interval. Once you have set the desired workout, ❸ press "SETUP" to exit.

As soon as you pull on the drive cords the monitor will start counting down the time (Figure C). When the first interval is completed, the monitor will countdown the rest interval (Figure D). When the rest interval is complete, the monitor will stay ready for the next time interval (Figure C).

When you have completed your workout, you can review all intervals by pressing "REVIEW" (see "Workout Review" on p. 35). Press the up/down arrows to see the next interval.

NOTE: To pre-set splits for your interval workout, see "Setting Split Times / Distances" on p. 35.



SETTING SPLIT TIMES / DISTANCES

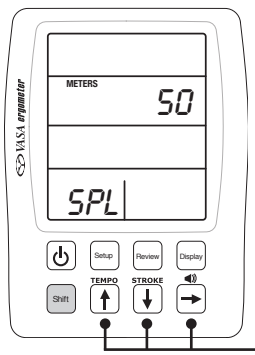
Default split times are pre-set at 50 meters and 30 seconds. If want to change the defaults, press "SETUP" then "REVIEW". The distance split interval is shown first (Figure A). Press "DISPLAY" to show the time split interval (Figure B). Use the arrow buttons to select a different split interval.

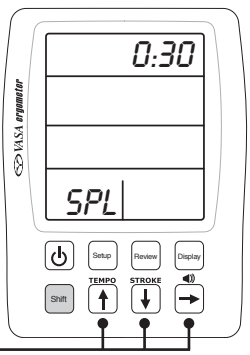
NOTE: The split times will reset back to the defaults when the monitor is turned off.

Figure A

Figure B

Split Distances:
25M
50M (default)
100M
200M
1000M





Split Times:
:30 sec (default)
1:00 min
2:00 min
3:00 min
4:00 min
5:00 min
10:00 min

push "setup" then "review" to change defaults

DISTANCE

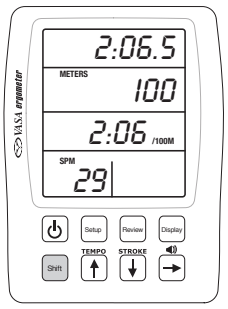
TIME

use arrows to set desired splits
press "display"to toggle between distance and time splits

WORKOUT REVIEW

The VM Monitor contains a workout review feature that will store up to 20 splits +/or intervals. After you complete your workout, the monitor will display (Figure C) your TIME, DISTANCE, AVERAGE PACE* and STROKES / MINUTE for the most recent interval.

Figure C



* Pace is dependent on which view (Swim vs. Kayak) you are in. Swim view will display pace /100M while Kayak view will display pace /500M

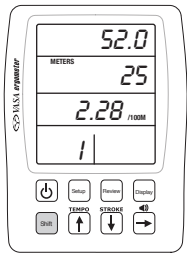
To review the information for each split, press the "REVIEW" button. To review next split, press the UP and DOWN arrows. The split information shown is (Figure D):

Top: TIME of the interval
Second: DISTANCE of the interval
Third: AVERAGE PACE / 100M (or /500M) for the interval
Bottom Left: INTERVAL number

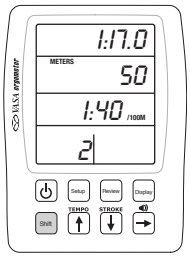
Note: After 5 minutes of inactivity, the monitor will auto shut off and clear your workout data.

Figure D

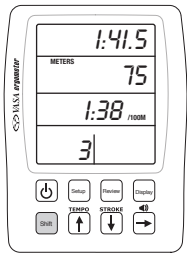
Example of a 100M workout with 25M splits.



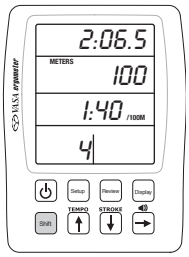
Split #1



Split #2



Split #3



Split #4

AUDIBLE STROKE RATE TEMPO BEEPER

The VM monitor contains an audible stroke rate tempo beeper, which allows you to set a desired stroke rate (strokes per minute) and keep pace by listening to the beeper tone tempo.

To set the tempo beeper, press and hold "SHIFT", then press "TEMPO" (up arrow ↑) (Figure D). Set the desired stroke rate per minute using the up ↑, down ↓ and right → arrow keys. To exit, press and hold "SHIFT", then press "TEMPO" (up arrow ↑).

The VM monitor will beep every cycle, according to the STROKE RATE (SPM) you set. To turn the beeper sound off, press and hold "SHIFT", then press the horn button ◀)) (right arrow →) (Figure E).

The beeper will automatically turn off when the VM is turned off.

Figure D

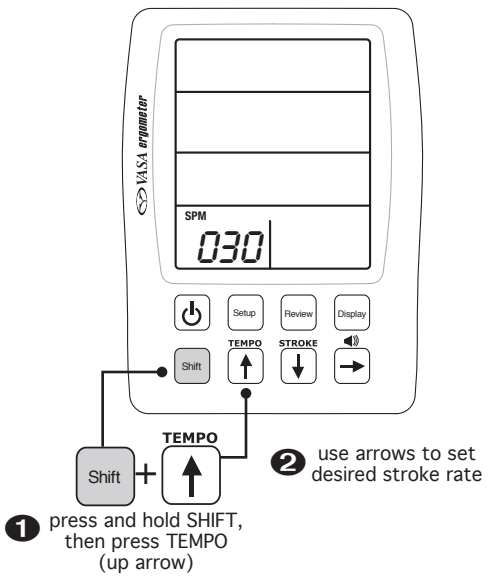
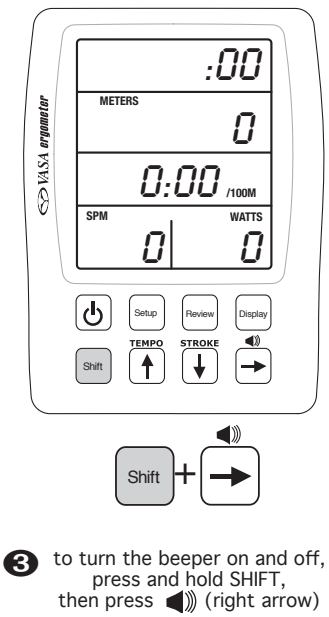
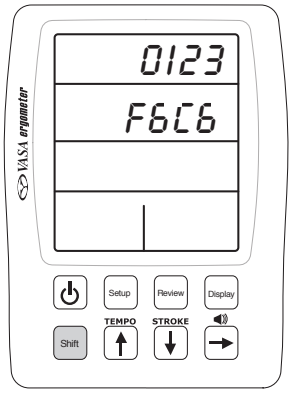


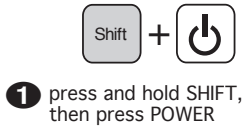
Figure E



SOFTWARE VERSION

You can display the software version of your monitor to check if you have the most current version of the software. While the power is OFF, press and hold "SHIFT", then press "POWER". All LCD segments will display for a moment, then the version number will be displayed in the top field.





BATTERY REPLACEMENT

The batteries in your Vasa Ergometer Monitor should last about 600 hours. When you see "LOW CELLS" in the top two fields of your monitor, the batteries should be changed.

To change the batteries, open the battery compartment on the back of the monitor (Figure A). The monitor takes two "AA" batteries (alkaline are fine).

IMPORTANT: PLEASE REMOVE THE BATTERIES from the monitor if it will not be used for 3+ months.

BATTERY SAVE FEATURE

There is a 5 minute timeout feature on your monitor. If there is no "activity" the monitor will power down after 5 minutes ("activity" includes inputs from pulling on the drive cord, pushing buttons, or serial communications with a computer). Any workout information will be cleared from the memory as soon as the monitor shuts off.

RE-ZERO MONITOR ONCE CONNECTED TO CABLES

You should RE-ZERO the monitor every time the monitor is reconnected to the connection cables (i.e. batteries replaced, removed from machine, etc.). To RE-ZERO (calibrate) the monitor, please follow these simple steps:

1. Plug in the cables to the monitor and make sure they are seated correctly into the jacks;
2. Next, turn the monitor OFF until you hear a short "beep";
3. Next, turn the monitor ON by pressing the ON/OFF button. DO NOT PULL on the cords.
4. Next, turn the monitor OFF again (wait for short "beep").
5. The monitor is ready to use. You may start by pressing ON/OFF or just exercising.

REMOVING THE MONITOR

It is NOT recommended that you remove the monitor from the Vasa Ergometer on a regular basis. If you need to remove the monitor, it is suggested that you remove the batteries. When you reconnect the monitor make sure to follow the RE-ZERO procedures stated above.

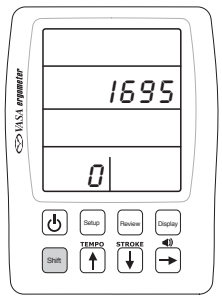
NOTE: Prior to disconnecting the connection cables, power the monitor OFF and wait for the delayed "beep" to ensure the computer has properly shut down. Disconnecting prior to this can cause the monitor to display irregular data.

ODOMETER

The odometer function allows you to track total swim distance, total kayak distance, time in seconds and left and right arm strokes on your Vasa Ergometer.

To display the odometer, press and hold "SHIFT", then press "DISPLAY". Use the "DISPLAY" button to cycle through the various totals:

Display #0 Total SWIM METERS
Display #1 Total KAYAK METERS
Display #2 Total SECONDS IN OPERATION
Display #3 Total STROKES / LEFT SIDE
Display #4 Total STROKES / RIGHT SIDE
Display #5 Total TACKS # LEFT *(Vasa use only)*
Display #6 Total TACKS # RIGHT *(Vasa use only)*



Press and hold SHIFT and DISPLAY to activate the odometer. Then cycle through all totals by pressing DISPLAY.

METERS AND PACE CALCULATIONS IN THE MONITOR

The Vasa Ergometer Monitor simulates the performance of the athlete by measuring the force (many times per second) during a stroke and powering a model through the water using that information. During each increment the monitor calculates the distance covered (swimmer/kayaker depending on which mode you are in) in that increment and adds that to the total distance. The METERS display field shows that total distance. The monitor also keeps track of the distance and time at the start of each stroke and uses this information to calculate the average pace during that stroke. Pace is displayed in the /100M field within Swim View and /500M within Kayak View.

NOTE: Pace and distance accumulated are calculated to approximate the pace and distance. For swimmers it is calculated without a start or turns, while "pulling" with a pullbuoy (similar to open water swimming).

DEFINITION OF STROKE

The Vasa Ergometer Monitor defines a "stroke" as the completion of one arm/paddle cycle.

ALTERNATING ARM STROKES (freestyle, nordic single poling, surf paddling, kayak/ canoe padding). One stroke would be the complete of one cycle of both the left and right arms. The monitor will start collecting data on whichever side you start the first pull (left or right).

ALTERNATING ARM: ONE STROKE CYCLE

ENTRY | MID-STROKE | FINISH | RECOVERY | CYCLE COMPLETE

SIMULTANEOUS ARM STROKES (butterfly, breaststroke, nordic double poling)
One stroke would be the completion of one cycle, from entry through recovery with both arms

SIMULTANEOUS ARM: ONE STROKE CYCLE

ENTRY | MID-STROKE | FINISH | RECOVERY | CYCLE COMPLETE

NOTE: If you change they type of stroke during a workout (from double arm to alternating arms, or vice versa), the monitor will auto detect the change and adjust the stroke data within 2 or 3 stroke cycles.

MONITOR - SUMMARY OF FUNCTIONS

IMPORTANT: PLEASE REMOVE THE BATTERIES from the monitor if it will not be used for 3+ months**.**

AUTO START: As soon as you pull on the drive cords, the monitor will automatically turn on and begin monitoring your performance. It will automatically enter Basic Mode > Pace (see chart below). You can reset the monitor using the ON/OFF button.

VIEWING OPTIONS: SWIM vs. KAYAK (p. 26): SWIM VIEW is the default viewing mode. If you are in KAYAK VIEW there will be a "K" in the upper left corner of the top screen. No notation is displayed while in SWIM VIEW. If you wish to change to the KAYAK VIEW follow the steps listed on page 26.

**PLEASE NOTE: Pace is relevant to the view: SWIM VIEW= pace/100M while KAYAK VIEW= pace/500M.*

BASIC MODE (p. 28): Basic Mode has three sub-displays: PACE*, POWER, and CALORIES. Choose sub-modes by pressing the "Display" button.

BASIC MODE			
VM Field:	**BASIC > PACE**	**BASIC > POWER**	**BASIC > CALORIE**
TOP	ELAPSED TIME since start	ELAPSED TIME since start	ELAPSED TIME since start
SECOND	TOTAL METERS since start	AVERAGE POWER since start	TOTAL CALORIES since start
THIRD	PACE /100M* for last stroke	PACE / 100M* for last stroke	AVG CAL / HOUR for last stroke
BOTTOM Right	POWER (watts) for last stroke	POWER (watts) for last stroke	POWER (watts) for last stroke
BOTTOM Left	STROKE RATE in strokes / min	STROKE RATE in strokes / min	STROKE RATE in strokes / min

STROKE MODE (p. 30): To get into STROKE MODE, press and hold the blue "Shift" button, then press and release the "Down Arrow" button. Stroke Mode has three sub-displays: AVERAGE FORCE, MAXIMUM FORCE, and STROKE LENGTH. Choose sub-modes by pressing the "Display" button.

STROKE MODE			
VM Field:	**STROKE > AVG FORCE**	**STROKE > MAX FORCE**	**STROKE > STROKE LENGTH**
TOP	ELAPSED TIME since start	ELAPSED TIME since start	ELAPSED TIME since start
SECOND	STROKE RATE in strokes / min	STROKE RATE in strokes / min	STROKE RATE in strokes / min
THIRD	POWER (watts) for last stroke	POWER (watts) for last stroke	POWER (watts) for last stroke
BOTTOM Right	AVG FORCE for right side	MAX FORCE for right side	STROKE LENGTH for right side
BOTTOM Left	AVG FORCE for left side	MAX FORCE for left side	STROKE LENGTH for left side

INTERVAL TRAINING (p. 32): To pre-set a desired distance, time, and rest interval push the "SETUP" button (you must be in BASIC MODE). Pressing "DISPLAY" will toggle between DISTANCE, REST TIME for distance intervals, TIME, and REST TIME for time intervals. Use the arrows to change the flashing number. Once you have set the desired workout press "SETUP" to exit.

SETTING SPLIT TIMES / DISTANCE (p. 35): Default split times are pre-set at 50m and 30 sec. If want to change the defaults, press "SETUP" then "REVIEW" (Figure C). Use the arrow buttons to change the defaults. Press "DISPLAY" to toggle between DISTANCE splits and TIME splits.

WORKOUT REVIEW (p. 35): The VM Monitor contains a workout review feature that will store up to 20 splits. After you complete your workout, the monitor will freeze. To review the information for each split, press the "REVIEW" button. Then, to review each split, press the UP and DOWN arrows.

AUDIBLE STROKE RATE TEMPO COUNTER (p. 36): To set the tempo beeper, press and hold "SHIFT", then press "TEMPO" (up arrow ↑). Set the desired STROKE RATE (SPM) using the arrow keys. To exit, press and hold "SHIFT", then press "TEMPO".

RE-ZERO MONITOR (p. 36): RE-ZERO the monitor if the connection cables have been disconnected for any reason. Connect cables, turn POWER OFF and wait for delayed beep. Turn POWER ON (do not pull on cords). Power back OFF and wait for delayed beep. Complete and ready for use.

PART 3 – TECHNIQUE & FORM

The following section contains several exercises you can do with your Vasa Ergometer. There are many more exercises possible, especially exercises that target specific muscle groups (back, chest, legs, shoulders). Many of the exercises you can do on the Vasa Trainer are also adaptable for the Ergometer. To get ideas and see a complete list of these exercises or additional workouts, go to our website:

www.vasatrainer.com

EXERCISE TIPS

HANDLES VS. PADDLES

Most exercises will be more comfortable performed with the handles rather than the swim paddles. You may prefer to use the paddles for exercises that simulate swim or surf padding strokes. Swim Coaches feel that using the paddles force the athlete to engage the many muscles of the hand that you use while swimming or paddling in the water, resulting in stronger hands and better technique.

WARM UP AND STRETCHING

Always warm up with 5-10 minutes of light intensity aerobic activity before training with the Vasa Ergometer. Freestyle Endurance is an excellent exercise for warming up. Stretching after warm up and cool down after completing your workout is recommended.

SAFETY

Always practice strict safety when using the Vasa Ergometer. See PART 2, "Safety and the Vasa Ergometer" for guidelines on how to use the Vasa Ergometer safely, as well as tips for working with children.

For tips on how to safely get on and off the Vasa Ergometer for different positions, see the instructions on the next page.

PROPER BREATHING

- Always breathe rhythmically during exercise. Holding your breath can be dangerous because it stops the blood flow to your brain and could make you light headed or faint.
- Breathe in and out through both your nose and your mouth in order to get enough oxygen during each breath.
- Exhale when the exercise is the hardest, and inhale when the exercise is the easiest.
- Swimmers can practice "in water" breathing rhythm to simulate that aspect of the stroke.

PROPER FORM AND TECHNIQUE

Follow the directions in this manual for performing each exercise in a correct, safe manner. For exercises you do while lying on your back, press your lower back into the padded bench and tuck your chin to your chest. This will prevent lower back strain and will also give your abdominal muscles a better workout. For any exercises that are labeled ADVANCED, start slowly until you feel comfortable with the motion and follow the tips for safety and stability.

CHART YOUR PROGRESS

Tracking your improvements on the Vasa Ergometer, as in all training, will be a key in reaching your goals. One of the most effective methods for monitoring progress is to keep an accurate training log. A good log can serve to help you monitor the effects of each workout and the stresses associated with training. See the sample Vasa training log in the end of the "Workout" section. This can serve as a guide for tracking these components in your training program. You are more likely to be satisfied with your exercise program if you keep an effective log.

SWIMMING TECHNIQUE

There are two parts to the basic stroke: (1) the propulsive stroke and (2) the recovery. The movements are blended together since the entire stroke is smooth and continuous. There is no need to stop at any point of the stroke, unless you are isolating a certain part of the stroke or if you are working on technique aspects of the stroke. Complete the stroke sequence comparing your hand, arm, elbow, and body position to those shown in the pictures on the following pages. Improper technique can result in injury or poor results. Ideally, have a coach observe your technique too. You can also use a mirror or video camera / monitor set up in front of you to view your stroke.

KEY POINTS TO REMEMBER

- Be certain your hand position in the paddles or handles is comfortable and stable.
- Keep your elbows high at the catch and throughout the stroke. Concentrate on simulating perfect stroke technique.
- Use a continuous, fluid motion throughout the stroke.
- To avoid bumping your feet on the rear stanchion as the seat roller forward, keep your feet 6-8 inches apart so that they straddle the monorail as you glide forward.
- Getting safely on and off your Vasa Ergometer is an important part of your program. Please follow the guidelines below for the basic swimming stroke. For other positions, please refer to "PART 4 - Vasa Ergometer Exercises".
- Do not release the paddles or handles while drive cords are extended. They could strike the monitor or front assembly and cause damage or injury. Always manually return the handles or paddles to the ready position on the front assembly.
- During the basic swimming or paddling strokes, your arm, hand, and body position need to simulate proper stroke technique as closely as possible. Ask your coach or a friend who knows proper stroke technique to observe and point out areas that need correction. You can also place a mirror in front of you (and beside you if possible) to watch your technique, or set up a video camera and film your workout in order to analyze stroke technique.

1) Place hands in handles or paddles.

2) Pull handles/paddles to engage drive cord and place hands on front edge of bench.

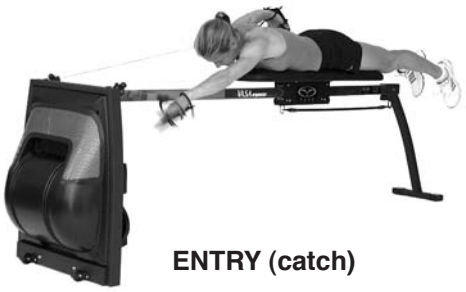
3) Lie on bench and keep one foot on floor to adjust your position on bench.

4) Bring foot off floor and bring hands into start position.

SAFETY NOTE: Do not release the paddles or handles while the drive cords are extended. They could strike the monitor or front assembly and cause damage or injury. Always manually return the handles/paddles slowly to the ready position on the front assembly (as shown in left insert).

FREESTYLE

ENTRY (the catch)
- Start the pull with your left hand, thumb first, reaching forward and laterally out to "catch" the water.
- To help with the "catch", drop your left shoulder slightly when reaching.
- Drive the opposite hip into the bench at the same time you catch and pull. Use the core abdominal muscles to initiate the hip drive.



ENTRY (catch)

MID-STROKE
- Out sweep: Press the hand laterally to the body with only slight elbow flexion and begin to rotate the hand at the wrist medially.
- In sweep: Press the hand towards the hips through further flexion of the elbow and wrist.
- Keep your elbows in a high position. If there were an eye on your elbow, it would be looking to the side in a direction perpendicular to the monorail.

MID-STROKE

FINISH
- With the hand at the hip and palm facing towards the feet, press back by extending the arm to approximately 90% of full extension.
- Keep your arm in line with your body to reduce drag.
- Finish strongly with a final push of the hand.

FINISH

RECOVERY
- Elbow leads, with hand relaxed, directly under the elbow, trailing fingers, then reach forwards to the entry position.

NOTE: Since your body can not rotate as much as in the water, we recommend that you keep the recovery hand & forearm <u>below</u> the level of the monorail to avoid impingement of the shoulder area.

RECOVERY

TIPS
- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Have someone watch you to help you match your body positions to those shown, or set up a mirror or video camera to watch your stroke.
- Use a smooth and continuous stroke throughout the stroke.

BUTTERFLY

ENTRY (the catch)
- Fully extend your arms in the start and position. Fingers enter the water first, thumbs leading slightly. Cup and catch the paddle with both arms simultaneously in preparation for the out sweep.
- Imagine your arms are extended over a big ball.

ENTRY

MID-STROKE
- Outsweep: Together, the arms press laterally, and the arm begins to flex at the elbow.
- In sweep: As the arms continue to flex, the hands turn medially and press towards the body.
- Keep your elbows in a high position. If there were an eye on your elbow, it would be looking to the side in a direction perpendicular to the monorail. Also, imagine that your arms are still over the ball. This helps internal rotation.

MID-STROKE

FINISH
- As the hands come close to the body, they then press towards the feet, fully extending the arms at the elbow in preparation for the quick 'flick' out of the water for recovery.
- Press the finish with the heels of your hands. (Don't flick your wrists, keep wrists flexed at 90 degrees).

FINISH

RECOVERY
- Both arms return simultaneously, hand and forearms first, the arms swing outwards, elbows slightly flexed as they both continue to swing around and meet forward of the head, thumb and fingers first.
- Keep your elbows slightly higher than your shoulders. Your hands will be rotating during the return so that will be in position for "entry" phase of stroke.

RETURN

TIPS
- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Have someone watch you to help you match your body positions to those shown, or set up a mirror or video camera to watch your stroke.
- Use a smooth and continuous stroke throughout the stroke.

PRE-LOAD

BREASTSTROKE - stroke segment training

Breaststroke training on the Vasa Ergometer can be performed in two ways:

A. Stroke Segment Training: In a prone position, you can practice segments of the breaststroke for conditioning and injury prevention.

B. Alternative Supine Position: Lie on your back and simulate the complete arm cycle.

SETUP - PRONE POSITION
Cross the drive cord under the monorail and put the left paddle in the right hand, and the right paddle in the left hand.

BREASTSTROKE ARM CYCLE SEGMENTS

1. REACH & GLIDE
Both hands, thumbs together, reach forward, fully extending the arm at the elbow.

2. OUT SWEEP
The hands rotate laterally and press laterally with slight flexion of the arm at the elbow.

3. IN SWEEP
The arms continue to flex at the elbow as the press on the paddle is now turned medially towards the chest.

OUT SWEEP

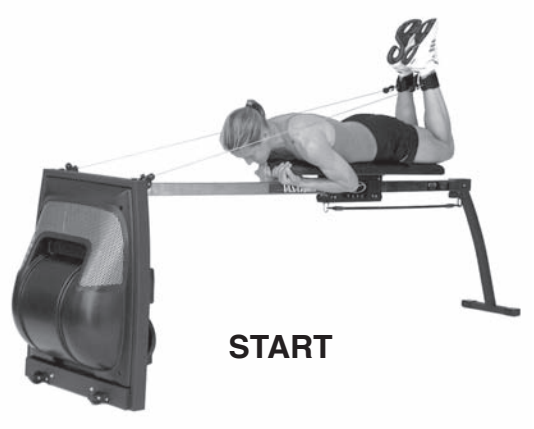
IN SWEEP

BREASTSTROKE KICK

SETUP AND GETTING SAFELY ON AND OFF

- Attach ankle straps to both legs, adjusting the ankle strap so the D-ring is in back.
- Grasp both drive cords on the front ergometer assembly.
- Straddle the bench facing forward.
- Attach the drive cord to each ankle strap (left cord to left ankle, right cord to right ankle).
- Holding the front or side of the bench, with your chest at the front edge of the bench. Hold onto front or sides of bench with hands and bend your knees (see START).

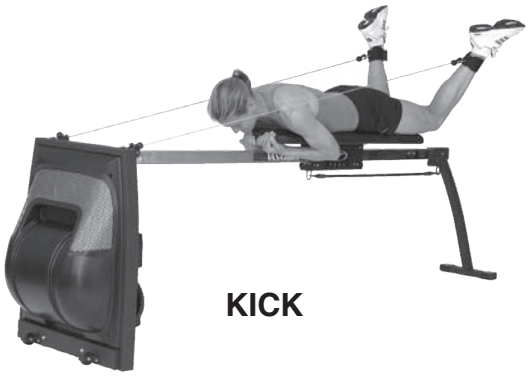
hold front or sides of bench



START

START

- Bring your feet up so your knees are bent 90 degrees.
- The heels should be drawn up toward the hips and the toes are turned outward to initiate the propulsive phase.



KICK

KICK

- Straighten legs by pushing heels toward rear and simulating breast stroke kicking motion.
- The heels should continue to be the leaders and with the heels in a position outside of the knees, propulsion begins. The heels take an elliptical path as the legs are extended-pressure maintained on the bottom of the feet.

FINISH

FINISH

- Return to start position by flexing knees to 90 degrees.
- At full extension the heels come together and the completion of the kick occurs as the toes are extended to maximize the streamlined position.

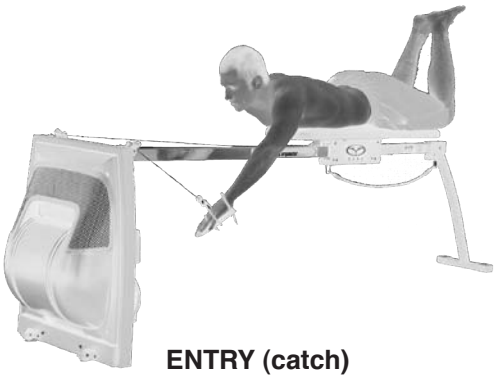
NOTE: When doing this exercise, DO NOT tether the bench so that your legs extend beyond the rear stanchion (the bench should be free moving). This could extend the drive cord beyond its intended length and damage your Ergometer.

TIPS

- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Have someone watch you to help you match your body positions to those shown, or set up a mirror or video camera to watch your stroke.
- Use a smooth and continuous stroke throughout the stroke.

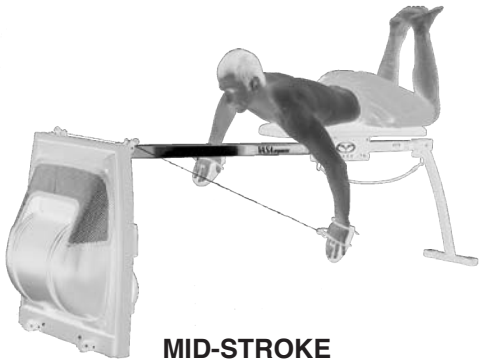
SURF PADDLING

ENTRY (the catch)
- Start the pull with your left hand, thumb first, reaching forward and laterally out to "catch" the water.
- To help with the "catch", drop your left shoulder slightly when reaching.



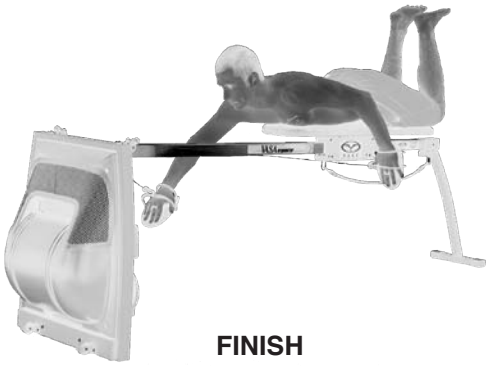
ENTRY (catch)

MID-STROKE
- Out sweep: Press the hand laterally to the body with only slight elbow flexion and begin to rotate the hand at the wrist medially.
- In sweep: Press the hand towards the hips through further flexion of the elbow and wrist.
- Keep your elbows in a high position. If there were an eye on your elbow, it would be looking to the side in a direction perpendicular to the monorail.



MID-STROKE

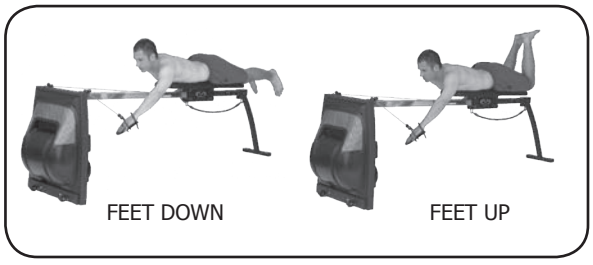
FINISH
- With the hand at the hip and palm facing towards the feet, press back by extending the arm to approximately 90% of full extension.
- Keep your arm in line with your body to reduce drag.
- Finish strongly with a final push of the hand.



FINISH

RECOVERY
- Elbow leads, with hand relaxed, directly under the elbow, trailing fingers, then reach forwards to the entry position.

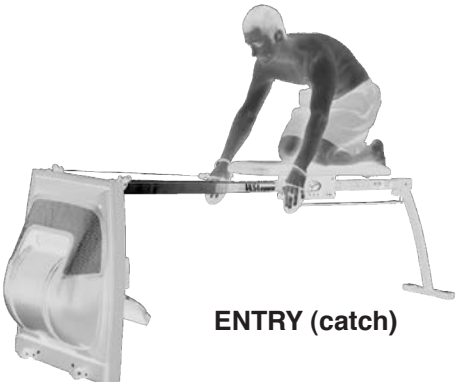
TIPS
- You can also do this exercise in a kneeling position to simulate paddleboarding, or the ready position to catch that killer wave! (See next page).
- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Have someone watch you to help you match your body positions to those shown, or set up a mirror or video camera to watch your stroke.
- Use a smooth and continuous stroke throughout the stroke.
- You may choose a "feet up" or "feet down" position, whichever is more comfortable.



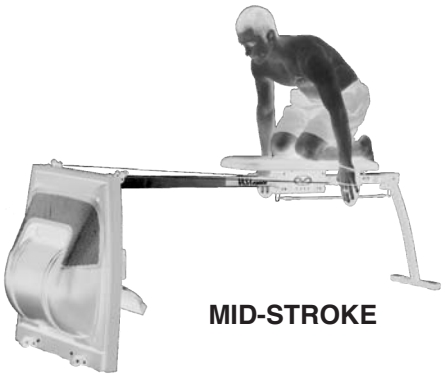
SURF PADDLING KNEELING (PADDLE BOARDING)

CAUTION: This is an advanced exercise. Be sure to hook your instep over the bench and engage your abdominals for stability. Start slowly until you feel comfortable with the motion and your stability.

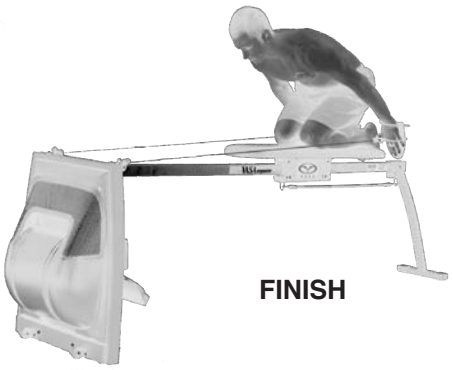
----- DOUBLE ARM -----



ENTRY (catch)

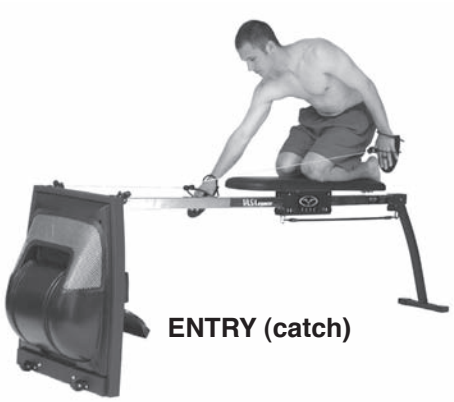


MID-STROKE



FINISH

----- SINGLE ARM -----



ENTRY (catch)

MID-STROKE

FINISH

KAYAK PADDLING

SET-UP

- Install the foot brace and position it for optimal form and knee bend as noted on page 10. (It will be easiest to change your seat position on the bench by setting the foot brace and then sliding your seat on the bench).
- Connect the kayak paddle end loops to the drive cords (right cord to right end of paddle, left cord to left end of paddle).
- Hold the paddle shaft with your hands slightly wider than shoulder width apart. The arms will maintain a nearly straight position throughout the paddle motion.
- Sit on the bench and position your feet so they are comfortable on the foot brace. The legs will have a slight bend at the knee. The shoulders will be slightly ahead of the hips.

CATCH

CATCH

- Start by rotating the trunk and shoulders to bring the bottom arm forward and the upper arm to chin level (see photo on right).
- The lower paddle side should "catch" at the same level as the foot.

MID-STROKE

- The paddling motion is generated by the rotation of the torso and not solely by the pushing or pulling action of the arms. The arms will remain in a nearly straight position transferring power to the paddle as the body rotates.
- The leg on the same side as the stroke will extend while the off-side leg will flex creating better torso rotation.

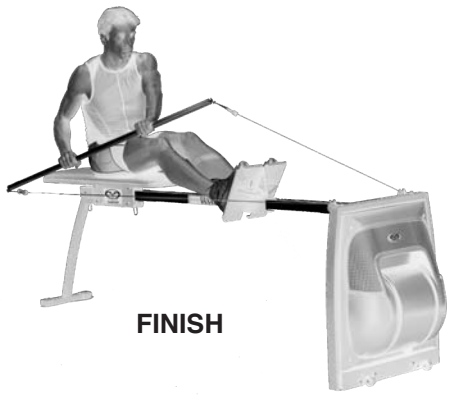
MID-STORKE

FINISH

- The paddle should "exit the water" when the hand reaches the hip.

TIPS

- If resistance seems too light, open the damper door to a higher setting.
- Use a smooth and continuous stroke.
- Vary tempo for different training effects. You can pre-set the stroke rate with the audible tempo beeper on the monitor as described in Part 2 of the Instruction Manual.



FINISH

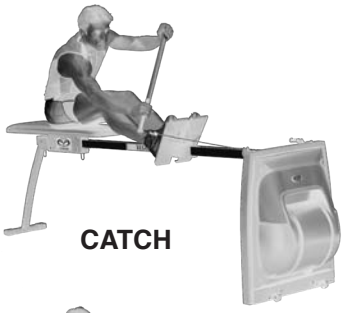
CANOE PADDLING

SET-UP

- Install the foot brace and adjust it to the correct distance for the legs. (It will be easiest to change your seat position on the bench by setting the foot brace and then sliding your seat on the bench).
- Connect the canoe paddle end loop to the drive cord on the side you wish to paddle first.
- Grasp the top grip with the top hand and the lower shaft with the other hand.
- Straddle the bench, then sit on bench facing forward.
- Sit on the bench and position your feet so they are comfortable on the foot brace. The legs will have a slight bend at the knee. The shoulders will be slightly ahead of the hips.

CATCH

- Start by rotating the trunk and shoulders to bring the bottom arm forward and the top arm either over the bottom hand or in the center of the body. Both arms should remain nearly straight throughout the stroke.
- The paddle should "catch" at the same level as the foot as shown in photo to the right.



CATCH

MID-STROKE

- The paddling motion is generated by the rotation of the torso and <u>not</u> solely by the pulling action of the arms. The arms will remain in a nearly straight position transferring power to the paddle as the body rotates.
- The feet will brace the body during rotation.

MID-STORKE

FINISH

- The paddle should "exit the water" when the lower hand reaches the mid-thigh or hip.

FINISH

TIPS

- If resistance seems too light, open the damper door to a higher setting.
- Use a smooth and continuous stroke.
- Vary tempo for different training effects.

SWITCHING SIDES - OPTION

1. ONE PADDLE SHAFT

- Disconnect the paddle end loop from the drive cord clip.
- Reconnect the paddle end loop to the other drive cord clip.

NOTE: We do not recommend you paddle on the opposite side of the drive cord connection. Doing so will cause increased wear of the drive cord due to rubbing on the monorail and potentially the monitor.

2. TWO PADDLE SHAFTS

- Connect one paddle to each of the drive cord clips (one on left side and one on right side).
- Rest the handle of one paddle in the middle portion of the foot brace and use the other paddle to start your workout.
- Switch paddles when you want to switch sides.

NORDIC SINGLE POLING

CAUTION: This is an advanced exercise. Be sure to hook your instep over the bench and engage your abdominals for stability. Start slowly until you feel comfortable with the motion and your stability.

- Connect the handles to the drive cord. Pull handles to engage drive cord and place hands on front of bench. Straddle the bench, then kneel on bench facing forward. Hook instep over back of bench.
- Start with one arm extended in front and the other arm extended to the rear, palms facing in as if holding pole grips.
- Simulate the single poling motion by initiating the pull with the abdomen. Pull one arm backward as as you recover with the other arm forward. Keep a consistent cadence throughout the motion, fully extending arms toward hips in the FINISH position.

START

FINISH

TIPS

- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Use a smooth and continuous stroke.
- Vary tempo for different training effects.

NORDIC DOUBLE POLING

CAUTION: This is an advanced exercise. Be sure to hook your instep over the bench and engage your abdominals for stability. Start slowly until you feel comfortable with the motion and your stability.

- Connect the handles to the drive cord. Pull handles to engage drive cord and place hands on front of bench. Straddle the bench, then kneel on bench facing forward. Hook instep over back of bench.
- Start with arms extended in front, holding handles, palms facing in.
- Simulate the poling motion by initiating the pull with the abdomen. Pull with both arms at the same time, fully extending arms toward hips. Slowly return to starting position.

START

FINISH

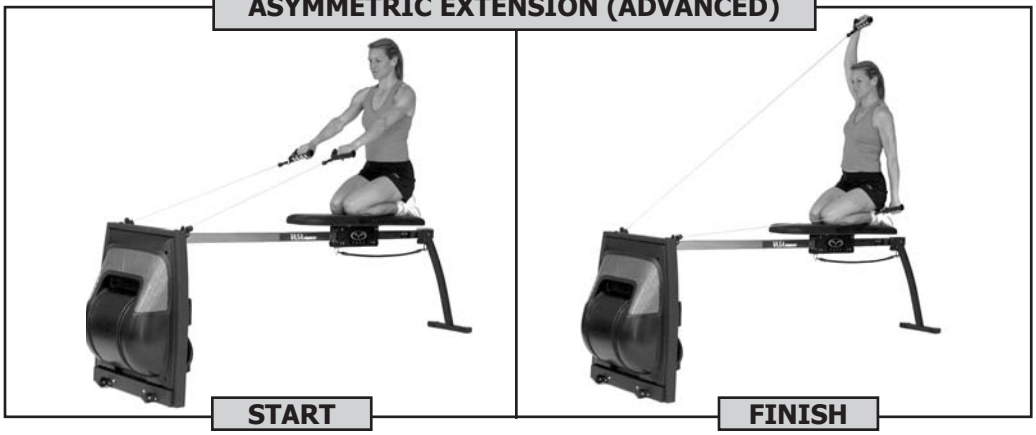
TIPS

- If it seems "too easy", open the damper door to a higher setting.
- If the seat rolls too far forward, attach a harder tether cord.
- Use a smooth and continuous stroke.
- Vary tempo for different training effects.

FUNCTIONAL TRAINING EXERCISES

The following is a sampling of many other exercises possible to do on the Vasa Ergometer for Rehab, Endurance and Circuit Training. See our website for full listing and updates.

ASYMMETRIC EXTENSION (ADVANCED)



CAUTION: This is an advanced exercise that requires a strong core and excellent balance. Start slowly until you feel comfortable with the motion and your stability.

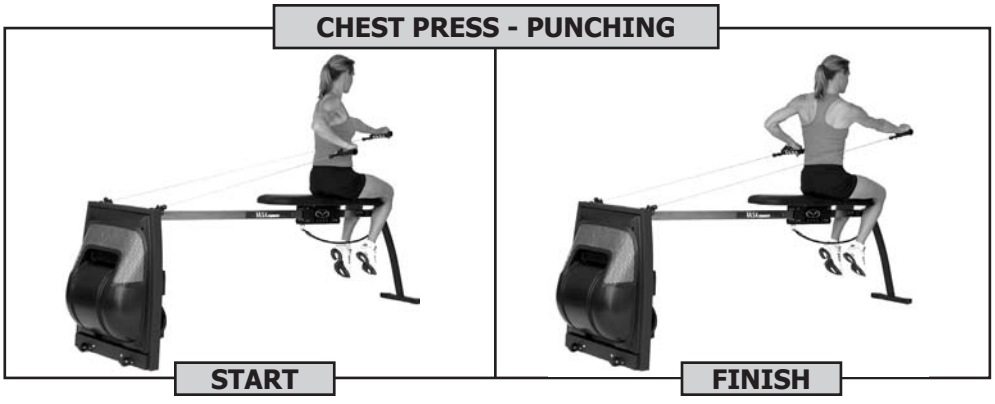
- Hold both handles and kneel on the bench facing forward. Hook instep over back edge of bench for stability.
- Start with your arms extended in front, shoulder-width apart. Keep back straight and hips stable.
- Simultaneously raise one arm toward ceiling while the opposite arm pulls straight down and back. Fully extend both arms. Reverse the motion raising the opposite arms up and back.

DO: Fully extend both arms. Keep an upright posture and hips stable.

DON'T: Do not tighten neck muscles or allow hips to move forward or backward.

TARGETED MUSCLES: Triceps, Deltoids (Shoulders), Latissimus, Upper Back, Core Stabilizers

CHEST PRESS - PUNCHING



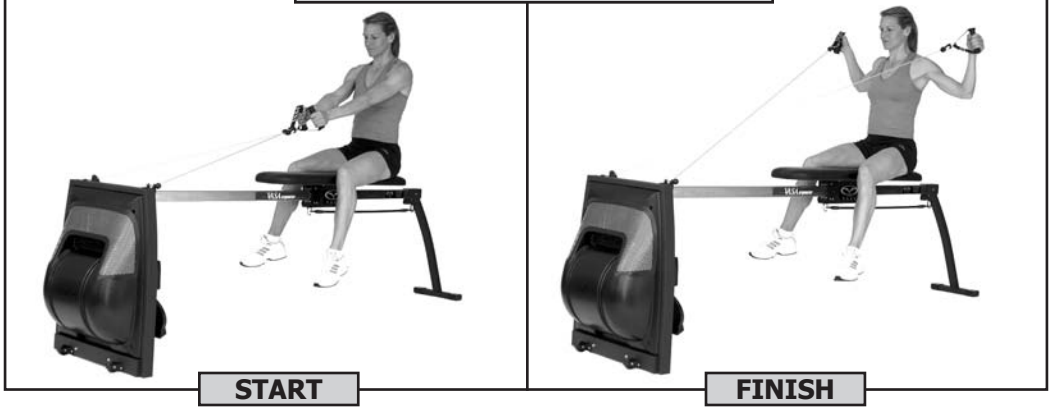
- Hold both handles, facing backwards, pull on handle to engage drive cord and walk to the bench.
- Straddle the bench facing the back of the Vasa Ergometer, then sit on the bench with your knees bent 90 degrees. The bench should be fully supporting your upper legs.
- Start with upper arms at your side and elbows bent 90 degrees, palms facing down.
- Extend your right arm out in front of your chest until your arm is fully extended (punching motion).
- As you return your right arm back to the start position, extend your left arm out.
- Repeat this sequence.

DO: Pause briefly in the FINISH position and flex the pectorals for an extra contraction.

DON'T: Do not twist upper body during the press. Movement should be from the pectorals.

TARGETED MUSCLES: Outer Pectorals

CROSS CABLE REVERSE FLY



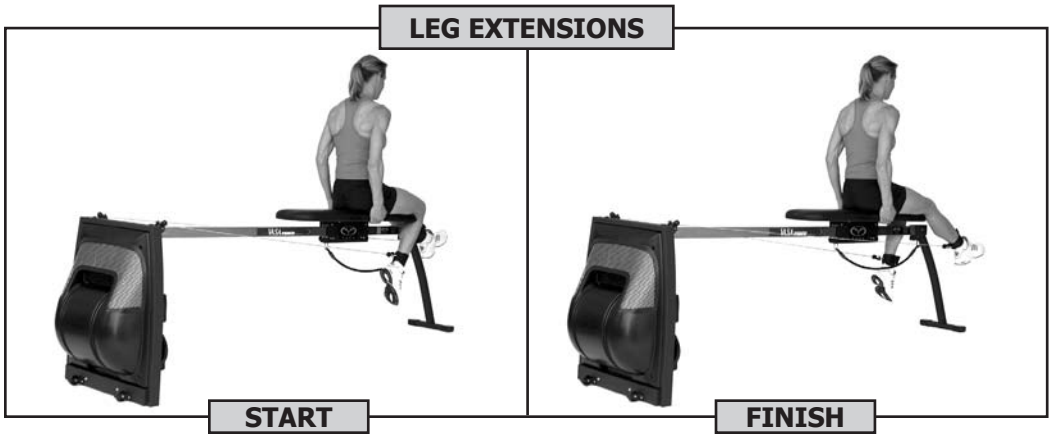
- Cross the cables by taking the right handle with left hand & the left handle with right hand.
- Hold handles as you sit on the bench facing forward with knees bent over the front of the bench.
- Start with arms fully extended in front of you with your palms facing in or down.
- In a sweeping motion, pull the handles outward and back.
- Reverse motion to return to starting position.

DO: Contract core muscles at all times. Feels like "pinching" shoulder blades together.

DON'T: Do not arch/curve back.

TARGETED MUSCLES: Rear Deltoids (Rear Shoulders)

LEG EXTENSIONS



- Attach ankle straps around your ankles. Taking the drive cord clips in opposite hands (left cord in right hand & right cord in left hand), straddle the bench facing the rear. Clip the drive cords onto the ankle straps so cord is on same side of monorail. Sit on the bench with your legs bent over the end of the bench. Grasp sides of bench for stability.
- Extend one leg until it is straight. As you bring one leg back to start position, bring the other leg towards finish position, so legs are continuously moving.

DO: Contract the quadriceps muscles when the legs are fully extended.

DON'T: Do not allow the knee to go beyond a 90 degree angle when in the start position. This will put excessive stress on the knee.

TARGETED MUSCLES: Quadriceps

NOTE: When doing this exercise, DO NOT tether the bench so that your legs extend beyond the rear stanchion (the bench should be free moving). This could extend the drive cord beyond its intended length and damage your Ergometer.

PART 4 – SWIM TRAINING TIPS & WORKOUTS

4.1. EXAMPLE OF AN EXCELLENT HIGH ELBOW CATCH & PULLING PATH

The following analysis was provided by Haydn Woolley of Future Dreams Swimming (www.futuredreams.co.nz) and by Coach Al Lyman of Pursuit Fitness (www.pursuit-fitness.com).

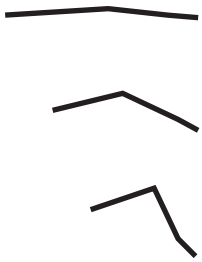
HIGH ELBOW CATCH

Grant Hackett's stroke at 475 meters of his 800m gold medal race at the 1997 Pan Pacific Championships, Fukuoka, Japan.

7.

8.

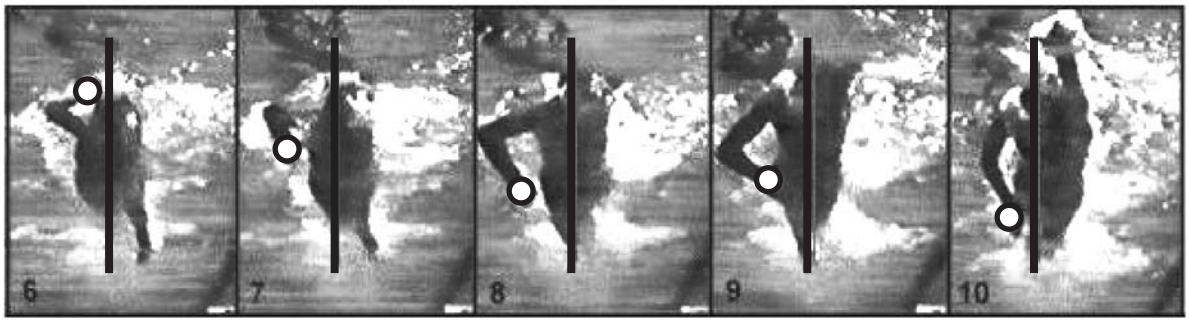
9.



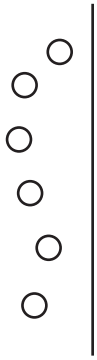
NOTES

a) The catch in this example is "literally" a CATCH. The swimmer has effectively trapped and held the point he has just reached out to - note that there is NO movement of the hand backwards
b) Even though the hand has not moved backwards, the body has continued to move forwards by the degree indicated by the arrow.

PULLING PATH



Grant Hackett's stroke at 270 meters of his 400m silver medal freestyle race at the 1998 Perth World Championships.



NOTES

a) The most important feature of this pulling "path" is that it does not "cross" the center line (drawn down the middle of the swimmers body). That is, the right-arm will stay on the right hand side of this imaginary center line for the entire pull movement.
b) Another important feature is the immediate press "outwards" to initiate the Catch phase - this keeps the hand holding water on the outside of the line for the entire pull.

4.2 - DRILLS FOR IMPROVING SWIM TECHNIQUE

The Vasa Ergometer can help you to better see and correct flaws in your stroke. Here are a few drills to help some common problems and weaknesses.

GOAL: ELIMINATE CROSSOVER

Problem: Hand crosses the midline of the body at the catch phase of stroke. This motion will create excessive strain on your shoulders and possible injury. It will also slow you down by the side to side (fishtail) action you create with your body. This will quickly increase your drag in the water.

DRILL: WIDE CATCH

Stroke: Freestyle
Distance: 25 meters x 3-5 repeats
Damper: Level 1-2
Attachment: Paddles
Pace: Below Race Pace

Description: Using a "Catch-Up" or "Single-Arm" style drill, focus on making wide, exaggerated catches. Concentrate on keeping your hand in line with your shoulders at the catch. Pay close attention to make sure you are not crossing the midline of your body (or hitting the monorail).

Once you have success at the slower pace, gradually increase your speed to normal race pace. Swim with your head down in a neutral, streamlined position fully extended from your hand to toes. Monitor your hand position by looking up every few strokes. Make sure your catches are engaging above your shoulders.

Optional Tools/Aids:

1. Use a video camera to see your stroke pattern. Set up the camera so it is either at the front or the back of the Vasa Ergometer so you can best see your catch.
2. Lay a long mirror underneath the Vasa Ergometer so you can monitor your catch.
3. Ask a coach or friend to critique your stroke.

Assessment:

Times in the water should be improving due to more efficient stroke mechanics and less drag.

GOAL: CORRECT STRAIGHT-ARM PULL

Problem: In the attempt to increase stroke rate, the hand enters the water too early which can cause the arm to go down instead of the preferred extension. This downward motion will create a straight-arm pull which will greatly reduce power output and increase drag.

DRILL : CATCH-UP WITH FULL EXTENSION

Stroke: Freestyle
Distance: 25 meters x 3-5 repeats
Damper: Level 1-2
Attachment: Paddles
Pace: Below Race Pace

Description: Start by extending both hands out in front on either side of the monorail. Take your first stroke with one arm as you keep your other arm in a fully extended position. Complete the stroke with a full finish and recovery returning to the starting position. Take your next stroke with the other arm leaving the first arm extended out in front. Repeat this sequence focusing on long extensions back to the start position.

Variation: Do this drill while rotating your hips with each stroke. See next page for details.

Optional Tools/Aids:

1. Use a video camera to identify the length of your stroke. Set up the camera at the side of the Vasa Ergometer to analyze your reach.
2. Place a piece of tape on the rail as a target to reach full extension. If you prefer, you can tie the bench to the rear stanchion so the bench is stationary (not "floating" on the rail).

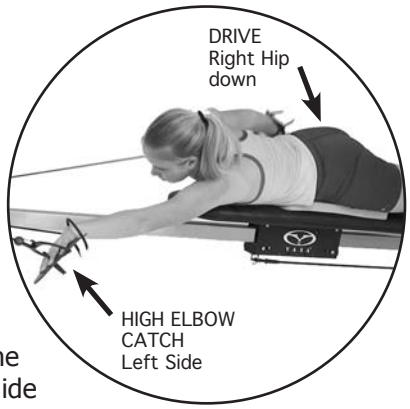
Assessment:

Times in the water should improve due to a more powerful stroke with less effort required.
NOTE: You can view your actual stroke length in centimeters. For full details on setting this up on the VM Monitor, go to the Stroke Mode description in Section 2 of this manual.

GOAL: IMPROVED HIP ROTATION

Problem: The swimmer has poor or weak hip rotation which creates a "flat" swim. The core muscles need to be activated to initiate the hip roll.

DRILL: HIP DRIVE



Stroke: Freestyle
Distance: 25 meters x 3-5 repeats
Damper: Level 1-2
Attachment: Paddles or Handles
Pace: Below Race Pace

Description: The swimmer simultaneously drives the opposite hip into the padded bench just at the catch. This won't give you the complete hip roll, but it will activate the same muscles in the core used to initiate the hip roll, which transfers energy and force into the stroking arm. It can also help with timing and getting a sense of glide between strokes.

NOTE: all freestyle swim training on the Ergometer ideally would be done this way to maximize the conditioning and neuromuscular benefits.

Optional Tools/Aids:

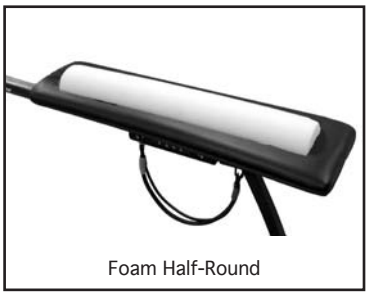
1. To decrease stabilization, lay on a rolled up mat or towel placed lengthwise on top of the Vasa padded bench. This destabilization will create an even greater demand for activation of core muscles.
2. Advanced swimmers: try items such as a long Aeromat pad or a foam half-round pad shown below.

Assessment:

Typically, the energy cost for the Freestyle will increase when hip roll is initiated. Times will improve due to a longer, more powerful stroke with decreased drag.

Rolled up Mat (or towel)

AeroMat


Foam Half-Round

You can purchase the Aeromat beams, foam half-rounds and fitness mats at most online fitness supply stores.
Or you can start by using a rolled up bath towel from your linen closet!

GOAL: IMPROVE ON YOUR HIGH ELBOW CATCH

Problem: The elbows drop during the catch thereby greatly reducing "pulling" power and increasing drag.

DRILL: FOREARM PULL

Stroke: Freestyle &/or Butterfly
Distance: 25 meters; Repeat drill up to 10 times
Damper: Level 1-2
Attachment: Handles
Pace: Below Race Pace

Description: Keep your head down in a neutral position while making your body long, head to toe throughout the drill. After you make your catch, focus on initiating the pull with your forearm. Be sure to keep your elbow high as if your arm needs to fit around a barrel (or there are eyes on your elbows looking out to the sides perpendicular to the monorail). Finish all the way to your hips with your fingers pointed down.

After you feel you have performed this with proficiency, gradually build your speed up to race pace continuing to focus on the high elbow catch.

Optional Tools/Aids:

1. Use a video camera to see your elbow position. Set up the camera at the back of the Vasa Ergometer so you can see if your elbows are dropping.
2. Place an object (like a large physioball or large box) under the monorail to provide a visual and physical barrier. The object should provide enough clearance for a proper, high elbow catch & pull, however not so much room it allows for a straight arm pull. The largest box your Ergometer was shipped in may work well depending on your size and reach.

Assessment:

Times in the water should improve due to a more efficient stroke with a more powerful pull.

GOAL: RECOVERY STROKE

Problem: The recovery stroke breaks down thus creating a shorter and weaker stroke.

DRILL: RECOVERY

Stroke: Freestyle &/or Butterfly
Distance: 20 strokes; 2-3 sets
Damper: Level 1-3 for Endurance / Level 5-7 for Strength
Attachment: Paddles or Handles
Pace: Below or Equal to Race Pace

Description: Lie on the bench facing backwards to work on the "recovery" portion of the stroke. Replicate a free-style or a butterfly recovery.

Optional Tools/Aids:

1. Use a video camera to see your stroke pattern. Set up the camera so it is either at the front or the back of the Vasa Ergometer so you can best see your form.
2. Lay a long mirror underneath the Vasa Ergometer so you can monitor your form.

Assessment: Times in the water should improve due to increased shoulder strength & endurance.

4.3 - STROKE RATES OF OLYMPIC SWIMMERS

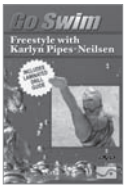
This chart represents the stroke rates (SR) of top swimmers in various strokes.

	MEN	WOMEN
FREESTYLE		
50	54 - 75	55 - 64
100	45 - 55	49 - 60
200	40 - 50	43 - 51
400/500	37 - 49	45 - 56
800/1000	39 - 43	46 - 58
BACKSTROKE		
100	47 - 56	42 - 52
200	44 - 48	39 - 46
BREASTSTROKE		
100	43 - 52	41 - 58
200	35 - 43	33 - 48
BUTTERFLY		
100	52 - 57	48 - 57
200	47 - 54	47 - 56

4.4 - TRAINING VIDEOS

Here are some of the training and workout videos available. To view all available videos, visit **www.vasatrainer.com**.

Better Technique + More Power = Faster Swimming: Learn how to integrate training with the Vasa Ergometer to achieve dramatic improvements in stroke technique, sustained stroke power, speed and stamina – so you can swim faster than ever before. Presented by swimming Coach Karlyn Pipes-Neilsen, along with Triathlon coaches Tim Crowley and Al Lyman. Part # DVD-BT: $29



Go Swim Freestyle DVD with Karlyn Pipes-Neilsen: Karlyn shares her six freestyle focus points for every level of swimmer -- novice to elite. The extraordinary swimming footage of Karlyn, combined with clear, step-by-step instruction, will help take your freestyle to the next level. Special laminated Stroke Guide helps you remember each focal point. Bonus section includes: starts & breakouts... flip turns... open-water sighting & ins-and-outs... using fins for training... breathing techniques... arm recovery... slow-motion footage. Part # KPN-DVD $39

Go Swim Open Water Swimming with Fran Crippen: In Go Swim Open Water, 6-time USA national champion and World Championship medalist Fran Crippen shares his key technique "secrets" for fast freestyle, and explains how to master the skills you need when swimming in open water. Part # FC-DVD $39

SWIMerVAL: 1.0 Freestyle Mania: Features two Vasa Ergometer workouts that train different energy systems. All competitive swimmers need to develop their anaerobic energy system (strength and tempo) and their ATP-CP system (explosive power/ speed) and that's what Swimervals workouts 1 and 2 do, respectively. Training with a coach's instruction and seeing others train along with you tends to be much more motivating than simply training on your own! Part # SWIMERVAL $35

4.5 - COACH RICHARD SHOULBERG'S VASA ERGOMETER WORKOUT

Coach Richard Shoulberg is the head coach at Germantown Academy, a former U.S. National Women's Coach and Olympic Coach.

"Whenever you improve strength in an athlete (the point of the VASA) it transfers to stroke technique. Vasa equipment can provide a strength increase that the water cannot. This transfers to stroke power and endurance. We use the Vasa Ergometer 3 days a week for 16 minutes. This depends on the individuals, their events and prime events for us to determine their workouts. "

VASA ERGOMETER WORKOUT

"Each of my swimmers records his or her information from every workout on the Vasa Ergometer. Use Vasa Training Log in Part 3 of the User's Manual or create your own."

MONDAY: **MULTI STROKE**

Warm-up:	Swim 3-5 minutes of each stroke in IM order.
Workout:	Swim 4 minutes of each stroke in IM order. No rest between strokes. Swim for 16 minutes. Record total meters and average watts to compare to next workout.
Cool-down:	Easy Swim for 5 - 10 minutes to bring down heart rate. Stretch after.

WEDNESDAY: **2 MINUTE INTERVALS**

Warm-up:	Swim 5 - 10 minutes of desired stroke.
Workout:	Swim desired stroke for 2 minutes at race intensity. Rest for 1 minute (active rest easy swimming). Repeat up to 8 sets. Record total meters & average watts to compare to next workout.
Cool-down:	Easy Swim for 5 - 10 minutes to bring down heart rate. Stretch after.

FRIDAY: **POWER INTERVALS - ALTERNATING SWIMMING AND LEG DRILLS**

Warm-up:	Do a 5 minute bike or run followed immediately by a 5 - 10 minutes swim of desired stroke.
Workout:	Swim desired stroke for 1 minute (all-out effort). Switch to Leg drill (see below) for 2 minutes Repeat up to 8 sets. Record total meters & average watts to compare to next workout.
Cool-down:	Easy Swim for 5 - 10 minutes to bring down heart rate. Stretch after.

Leg drill examples:
1. Leg extensions on the Vasa Ergometer;
2. Breast stroke kick on the Vasa Ergometer;
3. Plyometric Push-Offs on Vasa Trainer;
4. Stationary Bike;
5. Step-Ups (Stepping up and down on a stable bench or block)

OTHER EXERCISES

Continuous Swim: "I have my athletes swim on the Vasa Ergometer all-out for 16 minutes to get their heart rate up. They can usually get their heart rate up to about 190 BPM."

Recovery Drill: "I use the Vasa Ergometer to focus on the recovery muscle groups. I've found that if the recovery is weak, the whole stroke tends to be weak."

4.6 - VASA ERGOMETER WORKOUTS

This section has examples of different types of workouts that can be performed on the Vasa Ergometer. Use the built in features of the monitor to help monitor your training progress. You can use any of these workouts and adjust them according to your goal distance.

REMEMBER: The Vasa Ergometer will take some time to get adjusted to. It is an excellent tool and will improve your performance, but it is important to remember their is an adjustment period. Use the tips below to increase the rate of your success.

KEY TO SUCCESS FOR FIRST WORKOUTS

1. Set damper door to 1 (closed);
2. Plan to use same tempo or stroke rate as easy swimming for first weeks;
3. Always remember that technique is key. Focus on achieving a High Elbow Catch or Early Vertical Forearm (EVF) and do not apply much pressure on the paddles until your forearm is near vertical (or perpendicular to monorail). Then apply pressure until arm is fully extended to hip;
4. Let your hand "exit the water" in a neutral position. Do not "flick" your wrist at end of stroke.

HIGH ELBOW CATCH / EARLY VERTICAL FOREARM TIPS: Imagine you are paddling a surfboard, with the rails of the surfboard forcing you to stroke so the creases on the insides of the elbows pass the outside of the surfboard rails without touching the rails. If you imagine your elbow as an eyeball, then be sure that eyeball is looking out perpendicular to the monorail all the time. This sets the arm into a high elbow or EVF position.

HIP DRIVE: Once the above is built in the muscle memory, you can add the element of hip drive. This is done by to driving your opposite hip into the padded bench when you apply pressure to paddles with each stroke. When you extend forward with right arm, set that arm into EVF, then as you apply pressure to paddle you drive left hip bone into bench at same time, thus transferring core muscle energy into the hand and arm.

Suggestions for athletes and coaches using the Vasa Ergometer:

Improving stroke technique: Use a long mirror on the floor or on the side so you can watch your form, focusing on a high elbow pull and recovery. Capturing your Erg workout on video (front/side) can also provide excellent feedback.

Endurance: Do longer sustained sets of 15 minutes and longer swimming at a power output around 70-75% of your '10 sec max. power'.

Anaerobic power & speed: Do shorter efforts, 5-15 seconds in duration, between 95-100% of your maximal efforts with almost full recovery (1-3 minutes).

Motivation: Mix up your workouts and doing alternative strokes in addition to freestyle like butterfly, breast stroke, and recovery strokes.

ANAEROBIC POWER INTERVALS

Set distance intervals at an intensity or a pace just below your race pace, with a 1 minute easy swim or rest between sets. (Use the stroke of your choice. Triathletes use freestyle. IM swimmers can vary strokes with each set.)

WARM-UP: 10-15 minutes of freestyle
WORKOUT: Sprint: swim 10x50M just below race pace. Rest for 1 minute between sets.
Middle: swim 10x100M just below race pace. Rest for 1 minute between sets.
Distance: swim 10x200M just below race pace. Rest for 1 minute between sets.
COOL-DOWN: Easy swim for 5-15 minutes followed by stretching.

TIME TRIAL AT RACE INTENSITY

Swim a set distance while you maintain a specific target pace or intensity. Record and log your time to evaluate improvement. NOTE: You can use the "Audible Stroke Rate Tempo Beeper" to help swim at your desired stroke rate. Details on setting the Audible Tempo Beeper, go to Section 2 on VM monitor operation.

WARM-UP: 10-15 minutes of freestyle
WORKOUT: Sprint: swim 100M at race pace. Recover with easy swim for 5 minutes.
Repeat 2-3 times.
Middle: swim 400M at race pace. Recover with easy swim for 5 minutes.
Repeat 1 time.
Distance: swim 1500M - 3000M at race pace.
COOL-DOWN: Easy swim of choice stroke for 10-15 minutes followed by stretching.

NOTE TO TRIATHLETES & OPEN WATER SWIMMERS: choose a time trial distance that is appropriate for your current training phase & relative to your race distance.

INCREASE STAMINA (AEROBIC ENDURANCE)

Swim at an intensity of 65%-75% for a longer duration.

WARM-UP: 10-15 minutes of freestyle
WORKOUT: Swim for 15-30 minutes at a steady pace.
Strive to maintain a constant power output (watts).
COOL-DOWN: Easy swim of choice stroke for 10-15 minutes followed by stretching.

ASCENDING OR DESCENDING TIMED INTERVAL WORKOUT

Swim a set of intervals increasing the work duration for each interval. Use "Race Pace" intensity appropriate for your current training phase and fitness level.

WARM-UP: 10 - 15 minutes of freestyle
WORKOUT: Swim 1 min., rest 1 min.;
Swim 2 min., rest 1 min.;
Swim 3 min., rest 1.5 min.;
Swim 4 min., rest 2 min.;
Swim 5 min., rest or easy swim for 3 minutes.
Descend this series 5 - 1 depending on your fitness level & race distance goals.
You may repeat this ascend/descend series 2-3 times.
COOL-DOWN: Easy swim of choice stroke for 10 - 15 minutes followed by stretching.

SPEED WORKOUT FOR FREESTYLE

Swim a set of intervals increasing the work duration for each interval.
NOTE TO TRIATHLETES: vary stroke rates to simulate tempos used at race pace start, surges, and steady state.

WARM-UP: 10-15 minutes of freestyle
WORKOUT: 100 meters - above race pace; 1 minute rest;
500 meters - at race pace; 90 seconds rest;
100 meters - below race pace; 1 minute rest;
100 meters - above race pace; 1 minute rest;
5x100 meters - at race pace; 10 seconds rest;
100 meters - below race pace.
If feeling good...
BONUS SET - Swim another 10 x 50 meters above race pace; 10 sec. rest.
COOL-DOWN: Easy swim of choice stroke for 10-15 minutes followed by stretching.

MINI INDOOR TRIATHLON

Using your Vasa Ergometer, indoor bike trainer, and treadmill you can keep your workouts fun, motivational and effective. This also serves as a great way to practice transition T1 & T2. You'll become accustom to the feeling of going from swim to bike and bike to run, as well as improving on transition times. Here's a mini triathlon workout to get you started. Keep a log to monitor your progress. Have fun!

WARM-UP: SWIM: 10 minutes at an easy, steady pace
(65-70% of max); Transition immediately to bike.
BIKE: 10 minutes at an easy, steady pace
(70% of max / 90-100rpms); Transition immediately to run.
RUN: 10 minutes at an easy, steady pace
(70% of max).
WORKOUT: SWIM: 10 minutes (85% of max for 1 min. on/1 min. rest),
transition quickly to bike.
BIKE: 10 minutes (85-90% of max for 1 min. on/1 min. rest),
transition quickly to run.
RUN: 10 minutes (85-90% of max for 1 min. on/1 min. rest).
COOL-DOWN: Gentle cool down of swim, bike or run for 5-10 minutes to lower your heart rate.

4.7 - TESTING PROTCOLS & WORKOUTS FOR TRIATHLETES

Section 4.7 - "Testing protocols and workouts for Triathletes", was written by triathlon coach Al Lyman, CSCS of Pursuit Fitness. Coach Al is certified by USA Triathlon, USA Cycling, and the National Strength and Conditioning Association, and is a member of the American Swim Coaches Association. For more information, go to: www.coach-al.com.

INDIVIDUALIZED BASELINE TESTING for Intermediate / Advanced Swimmers

The purpose of baseline testing (both steady state and time-trial) is to establish a level for best-average pace, power, stroke rate, and effort (RPE) that you feel represents your current fitness level. Once you know where you are, you then have an idea of where you are going.

1K "STEADY STATE"

- Done at preferred power/pace & stroke rate (SR).
- Approx. 75% of max, or about half IM intensity
- Avoids compromising technique for more power

1K TIME TRIAL

- Maximum effort
- Best power/pace for the duration
- Preferred SR
- Use best technique throughout

Always warm-up prior to a workout or a baseline test. Example warm-up: swim 200-400m at a door level of 1. Start easily and gently. Then move to a door setting of 1.5-2 and do:

- 3 x50m building w/ each (each 50m faster than the previous) @ 15" non active recovery, then...
- 50m easy, then...
- 3 x75m building w/ each @ 15" non active recovery.
- Rest for approx. 1 min, then when you are ready, begin the TEST.

Note: Looking for a 1000 meters of straight effort at the same door level of 1.5-2, or what YOU feel is the most like "real" open water swimming in average conditions.

SAMPLE PROGRESSIONS - NOVICE

The primary goal of early developmental sessions for novices is to practice good form, build specific swimming coordination and low levels of functional strength in gradually increasing durations.

The highest priority is to focus FIRST on excellent form in all movements. Keep all efforts easy to steady and completely aerobic, with damper door at level 1. With improved strength and coordination, you may vary and/or slightly increase intensity and resistance and continue the gradual progression of reps and sets as outlined in the examples.

For example: Workout #10 (below) indicates 4x 100 at 30 seconds of non-active rest (nar). The next step in the progression would be to:

1. shorten the recovery portion from 30" to 10-15", or
2. increase the distance of the repetitions to 125-150, with the same non-active recovery.

Be sure to challenge yourself, but be patient and never let form deteriorate in exchange for either distance or intensity!

All below include a 30 second non-active recovery (nar) between each set.
Drills and Functional strength (RC) work are in addition to the workouts below.

1. 6x 25 @ 15" nar, repeat. Total: 300m
2. 8x 25 @ 15" nar, repeat. Total: 400m
3. 4x 50 @ 15" nar, repeat. Total: 400m
4. 12x 25 @ 10" nar, repeat. Total: 600m
5. 5x 50 @ 10" nar, repeat. Total: 500m
6. 16x 25 @ 10" nar, repeat, Total: 800m
7. 8x 50 @ 15" nar, repeat, Total: 800m
8. 4x 75 @ 15" nar, repeat, Total: 600m
9. 8x 50 @ 10" nar, repeat, Total: 800m
10. 4x 100 @ 30" nar, repeat, Total: 800m

SAMPLE SESSIONS - EXPERIENCED

GENERAL NOTES:

- Usually up to 3k, rarely above – on average 1.5-2k
- Target for most: 3 quality sessions per week during build
- Frequently use 400-500m as prelude to bike/run sessions
- Long indoor bike days: rotate VASA and bike trainer
- Incorporate Rotar Cuff (shoulders) / functional strength exercises (pg. 50)
- As bike & run taper, increase VASA frequency & volume increase
- Mirror / videotape: watch and ensure perfect elbow position
- Incorporate slight HIP roll / rotation timed with shoulder rotation

TECHNIQUE / MUSCULAR CUES:

Where is tightness or soreness?

If Triceps / inner elbow / deep shoulders = dropping the elbow!
If Upper Pecs, Lats, Upper Abs = ***proper technique on!***

COACH LYMAN WORKOUT #1

WARM-UP: 300-500m easy, door at #1, SR=30, watts=30-40.
MAIN SET: 5x 200m holding your TT test watts/pace.
Alt door settings this way: #2 - #1 - #3 - #2 – #1.
* Swim a VERY EASY door 1 recovery for 50m between each rep.
* Hold the same watts through the entire 'set', but vary resistance. On the door 1 settings, SR should be high, (e.g. in the 40-45 range), focusing on perfect form...
COOL-DOWN: 200m very easy

COACH LYMAN WORKOUT #2

WARM-UP: 200m easy, door at #1
DRILLS: 12x 1 min, alternating one-arm-only drill with steady swim. Take 10" non active rest between each 1' effort.
MAIN SET: 10x 100m w/ door at #2 like this:
75 at EE intensity, and then 25 at UT/TP, then....
COOL-DOWN: Change from paddles to handles for RECOVERY stroke (e.g. flip over so that your legs are up near the top of Erg and do 8x 30" of "recovery swimming" w/ 10" of non active recovery, then return to a normal position (keep handles in place) for 3-5' of easy cooldown swimming.....then stretch!

COACH LYMAN WORKOUT #3

WARM-UP: 200 easy
Note: start conservatively for the Main Set. Decrease times for each 300, 200, and 100. e.g. start slightly easier than you feel you can hold, & then finish at or around threshold intensity. Door at #2.
MAIN SET: 1 x 300 (45" non active recovery).
2 x 200 (30" non active recovery).
3 x 100 (do an easy 50 between each for recovery).
COOL-DOWN: 100-300 easy - your choice,

COACH LYMAN WORKOUT #4

WARM-UP: 200-300m easy, door at #1
MAIN SET #1: 2x 500m at your 'steady state' pace, door at #2.
MAIN SET #2: 4x 100m at UT (10sr, non active), while you adjust door setting:
#1: door at #4,
#2: door at #3,
#3: door at #2,
#4: door at #1
Note – goal for this set: hold at least your 1k TT pace, and even up to about 10-15w above test. These should be good and hard, yet controlled, efforts!
MAIN SET #3: 4x 25m on 40sec. Goal: sprint pace! Highest watts without stroke deterioration!
COOL-DOWN: 100 easy door #1, and then stretch!

COACH LYMAN WORKOUT #5

WARM-UP: 200 door #1 as 50 free, 25 fly, 25 breast, 25 fly, 25 breast, 50 free.
MAIN SET: 500-400-300-200-100m.
*Note: Start at door 1 for the first 500, and then increase to door #2 on the 400. As the workout evolves, increase intensity gradually, as well as resistance on the 300 and 200. For the 100, make this a TT type effort, door at 2#. Shoot for your best 100, with one focus, and that is PERFECT form. Do NOT sacrifice form in order to go faster!
COOL-DOWN: After the 100, do 200 very easy, and then stretch....

COACH LYMAN WORKOUT #6

WARM-UP: 200-300m. Relaxed, perfect form, door at #1.
MAIN SET #1: 12x 100m on enough time to change the door setting.
- ODD REPS: TP and choice SR.
- EVEN REPS: UT with high SR (40-50).

1-2: door #2 / door #1
3-4: door #3 / door #1
5-6: door #4 / door #1
7-8: door #5 / door #1
9-10: door #4 / door #1
11-12: door #3 / door #1
MAIN SET #2: 300m at steady UT, damper door #2
- FOCUS: long, elbow over hand pulls from a perfect catch.
- GOAL: perfect technique when fatigued.

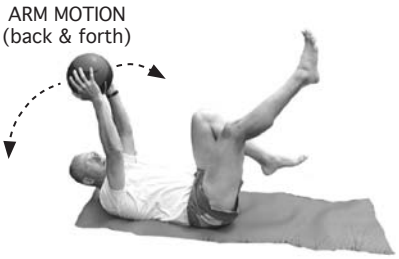
COOL-DOWN: 100m easy!, door at #1

INTEGRATING "TOTAL BODY" CONDITIONING

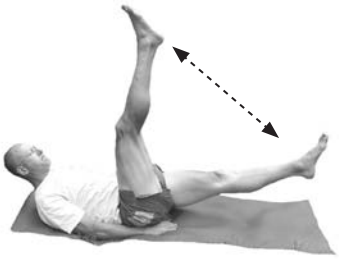
WARM-UP: 300m all damper door #1 as 100 free, 25 fly, 25 breast, 25 fly, 25 breast, 100 free
MAIN SET: 1. 25 power wheel roll outs (A), 1-2 mins bicycle kicks with 10lb med ball overhead in a lat pull down motion (B), 1-2 mins flutter and/or scissor kicks (C)
2. 500m door #2 - targeting >40 SR and >70w
3. repeat 1
4. 500m door #3 - targeting >35 SR and >80w
5. repeat 1
6. repeat 2
7. repeat 1
8. repeat 4
COOL-DOWN: 100-300m, door 1, very easy w/ with perfect form!

Pursuit Fitness triathlete Scott Johnson demonstrates the three exercises recommended.

A) Power Wheel Roll Outs
Roll back and forth



B) Bicycle Kicks with Medicine Ball
Arms pull-down motion while legs perform bicycle kicks



C) Flutter Kicks
Legs alternate up & down in a scissor kick motion

RACE PREP MUSCULAR ENDURANCE SESSION FOR EXPERIENCED

WARM-UP: 100m all door 1, choice stroke and drills
MAIN SET: damper door #2
Start at 1k – build to 3k, 2 weeks out from goal event
- Intensity: Begin at best average "steady" test watts
- Surge to sprint pace every 200 to simulate jumping a pack
COOL-DOWN: 100-300m, door #1, very easy w/ with perfect form!

Vasa Ergometer Training Log

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date							
PURPOSE (Endurance, Power, Intervals, Time Trial)							
Total Time							
Total Meters							
Heart Rate							
Work Time or Work Distance							
Rest Time (intervals)							
Damper Setting							
Tether Cords							
PACE							
Strokes / Minute							
Pace / 100M							
POWER							
Max Watts							
Average Watts							
CALORIES							
Total Calories							
Avg Calories / HR							
FORCE							
Avg Force Left							
Avg Force Right							
Max Force Left							
Max Force Right							
STROKE LENGTH (cm)							
Stroke Length Left							
Stroke Length Right							
TOTALS THIS WEEK							

Comments: _____

_____

_____

4.8. - RACING: VASA CHALLENGE & WORLD RANKINGS

Vasa Ergometer World Ranking

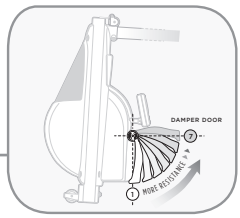
Time yourself for 100M, 400M, 800M or 1500M freestyle on the Vasa Ergometer and see how you stand up to the rest of the world.

GETTING STARTED - Vasa World Ranking

STEP 1: WARM-UP
Do a warm-up of easy freestyle or butterfly for at least5-10 minutes.

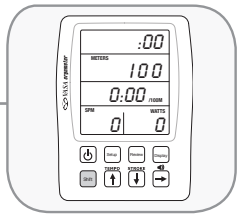
STEP 1
warm-up

STEP 2: SET RESISTANCE LEVEL
Adjust the damper door to the level (1-7) that feels right for completing the challenge distance you are racing.



STEP 2
adjust damper door

STEP 3: SET THE MONITOR TO COUNT DOWN YOUR DISTANCE*
Using the set-up instructions on the next page, set the VM Monitor to swim 100, 400, 1000 or 1500 meters then press "SETUP" to exit. The monitor will remain ready for you to begin the challenge. As soon as you pull on the drive cords, the monitor will begin counting.
(Tip: It helps to have another person set-up the monitor).



STEP 3
set the monitor

STEP 4: GET YOURSELF IN POSITION
Place your hands in the paddles/handles, and position yourself on the padded bench, arms extended and ready to start.

STEP 4
get in position

STEP 5: READY, SET, GO!
Start your race. The monitor will begin counting down the distance and counting up your time as soon as you begin pulling on the drive cords. *Tip: Pace yourself! Swimmers should expect time displayed to compare with "pulling" (using a pull buoy), no start & no push turns, long course meters!*

STEP 5
swim your race

STEP 6: RECORD YOUR TIME
When you complete your distance, the monitor will freeze so you can record your time on the **Official Race Entry Form** (on next page). You can submit your time online at **www.vasatrainer.com/worldranking** or fax your results to us at **802-872-7104**.

STEP 6
record your time

SET-UP TIPS:
1. *We recommend having another person set-up the monitor so you can be in the "ready position" without moving the drive cords. However, if you wish to do the set-up on your own, keep one foot on the floor, then press "SETUP" on the monitor, then GO! (As soon as you pull on the drive cords, the monitor will begin counting.)
2. To begin the race again or to reset the distance, press the "SETUP" button twice.

Vasa World Ranking - Rules:

You can download rules and official entry form by going to:
www.vasatrainer.com/worldranking

1. To ensure comparable times, you must use a proper freestyle swim stroke for the race.
2. Race distance options are: 100 meters, 400 meters, 1000 meters, or 1500 meters.
3. You can set the damper door at any setting (we recommend a setting of 2 or 3).
4. In order to keep the integrity of our world rankings, we request one of the following to document ALL world records.
   A. Photo of the monitor with world record time. *
   B. Witness to your world record time. **

* If you don't have a photo of your original world record time, you can swim another set and submit a photo with a similar time.
** If you are under 18, the witness must be a parent or coach.

SETTING THE MONITOR TO COUNT DOWN YOUR RACE DISTANCE – 100, 400, 1000, or 1500 METERS

1. To set the VM Monitor for the Vasa Challenge, turn the monitor on, then push the "SETUP" button. The left most number will be flashing (Figure A).

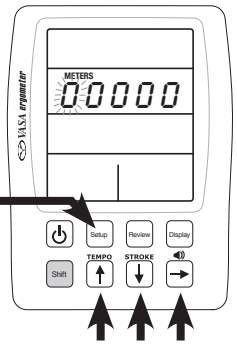
2. Move to the next number by selecting the right → arrow. Set your desired distance: 100, 400, 1000 or 1500 meters. Press the up ↑ and down ↓ arrows to change the flashing number.

3. Once you have set your desired distance, press "SETUP" to exit. The monitor will enter BASIC > Pace Mode. It will remain ready until you begin (Fig. B).

4. As soon as you pull on the drive cords, the monitor will begin to count down the distance and count up the elapsed time. The monitor will display: elapsed time, meters left to go, pace/100 meters, strokes per minute (SPM) and average watts.

5. When the pre-set distance is completed, the monitor will freeze so you can record the data (Figure C). To begin again or to reset the distance, press "SETUP" twice. After 5 minutes of inactivity, the monitor will turn off automatically.

Figure A



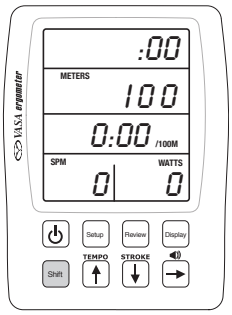
SETUP BUTTON

Setup

❶ push "setup" to set desired distance

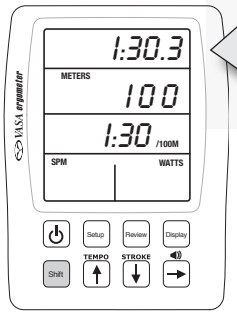
❷ use arrows to set desired distance, then push "setup" to exit

Figure B



❸ after setting the 100M distance, the monitor will stay ready until you start your workout

Figure C



Your Race Time!

❹ after completing 100M distance, the monitor will freeze so you can view and record the data

Vasa World Ranking – Official Entry Form

Racer's Name: _____ Phone: (_____) _____ - _____

Mailing Address: _____ City: _____ State: _____ Country: _____

Email address: _____ Location of Race: _____

Primary Sport: ❑ Swimming ❑ Triathlon ❑ Surfing ❑ General Fitness ❑ Other (please list): _____

Date of Birth: _____ Gender: _____ Race Distance (select only one): ❑ 100m ❑ 400m ❑ 1000m ❑ 1500m

T-shirt Size (adult sizes only): ❑ SMALL ❑ MEDIUM ❑ LARGE ❑ X-LARGE

Race Time Witnessed by*: _____ Date of Race: _____ Race Time: 00:00.0

minute(s) : seconds . tenth

**NOTE: In order to keep the integrity of our world rankings, we require World Record setting times to be witnessed or documented to be official. You may also document your time by sending a picture of your monitor with your world ranking time to: worldranking@vasatrainer.com*

Please **complete** and submit to Vasa by FAX, EMAIL or MAIL. Times may also be entered online at: **www.vasatrainer.com/worldranking**
For questions, call us at 800.488.8272 (International callers use 1.802.872.7101)
FAX: 802.872.7104 **EMAIL:** worldranking@vasatrainer.com **WEB:** www.vasatrainer.com/worldranking **MAIL:** Vasa, Inc. 1 Allen Martin Dr., Essex Junction, VT 05452 U.S.A.

TRAINING NOTES

PART 5 - MAINTENANCE & TROUBLESHOOTING

MAINTENANCE OF YOUR VASA ERGOMETER

Regular maintenance of your Vasa Ergometer is an important component of years of enjoyable, functional, and safe use of your machine. Maintenance requirements will vary considerably depending on how much use your Vasa Ergometer gets. Please read the following guidelines carefully as these recommendations are made to help you maintain your Vasa Ergometer most effectively. Follow the maintenance steps suggested on the next page based on the amount of use.

HIGH CHLORINE & HIGH HUMIDITY = HIGH MAINTENANCE

Unfortunately, steel does not fare well in humid, highly chlorinated environments at pool-side or outside in humid, salty ocean air. If your Vasa Ergometer is located in such inhospitable environments, it is extremely important for you to perform the maintenance steps on the next page at least once each month.

If you use your Vasa Ergometer on the deck of a pool, be sure to place a rubber mat under the machine to prevent it from slipping and to prevent contact with water from the pool. DO NOT use the Ergometer directly on the concrete surface of a pool deck without a rubber mat between the machine and the concrete floor.

WARNING

Use of the Vasa Ergometer in humid, chlorinated, or salt air environments will void the lifetime guarantee.

STORAGE OF YOUR VASA ERGOMETER

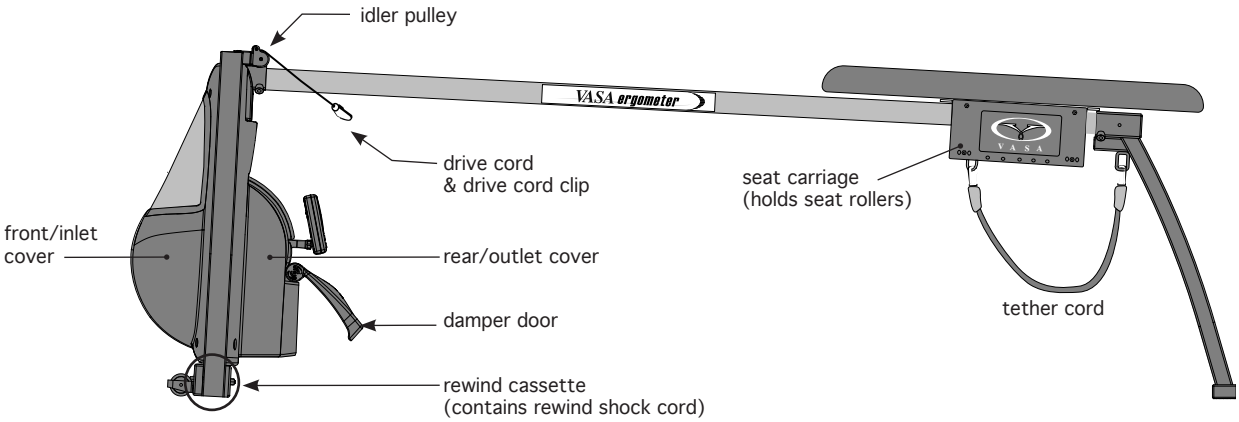
We recommend storing your Ergometer in a dry, indoor environment, away from a humid and/or chlorinated climate. The Vasa Ergometer is not designed to be left outdoors in the elements of direct sunlight, rain, or ocean air. If you must leave your Vasa Ergometer outdoors, either cover completely with a waterproof cover* or remove the monitor, padded bench and seat carriage assembly, the paddles/handles, and the tether cords and take them inside. Cover the rest of the machine with a waterproof cover* or tarp to minimize moisture collection on the metal parts.

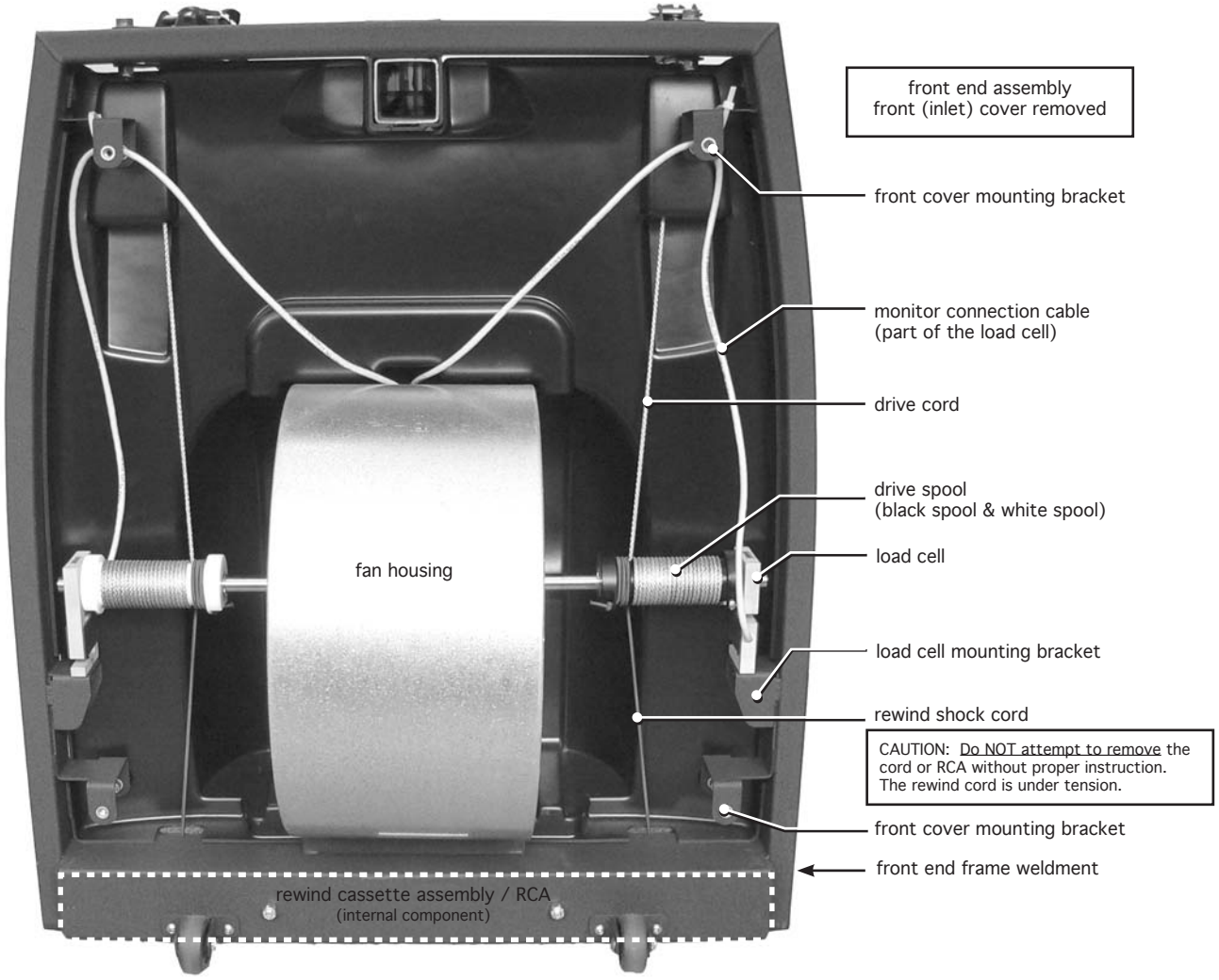
*Vasa Ergometer covers are shown on the Accessory page located in the back of this manual or online at www.vasatrainer.com.

SECURING THE VASA ERGOMETER IN SCHOOLS AND PUBLIC FACILITIES

Schools and teams may want to keep their Vasa Ergometers set up in the gym or training facility, yet will not want to risk injury to students, vandalism or theft of key parts. We suggest that you remove the monitor, padded bench and seat carriage assembly, the paddles/handles, and the tether cords and lock these in a safe place between training sessions. A cover also works well to deter unauthorized use. See PART 2 for more information on how to make your Vasa Ergometer tamper-resistant.

GETTING TO KNOW YOUR VASA ERGOMETER




front end assembly
front (inlet) cover removed
front cover mounting bracket
monitor connection cable
(part of the load cell)
drive cord
drive spool
(black spool & white spool)
load cell
fan housing
load cell mounting bracket
rewind shock cord
CAUTION: Do NOT attempt to remove the cord or RCA without proper instruction. The rewind cord is under tension.
front cover mounting bracket
front end frame weldment
rewind cassette assembly / RCA
(internal component)

VASA ERGOMETER - MAINTENANCE SCHEDULE

To keep your Vasa Ergometer working at its best, please follow the suggested maintenance schedule. The chart below outlines a general plan based on hours of use. The following pages will provide more details on each step.

Replacement parts can be purchased at **www.vasatrainer.com** or by calling us directly at 1-800-488-8272 (US only). International customers please call 1-802-872-7101.

	TEAM / CLUB USE 10+ hours per week (Heavy Use)	**PERSONAL / HOME USE** Less then 10 hours per week (Light to Moderate Use)
DAILY	1. Clean monorail	N/A
WEEKLY	1. Clean entire machine. 2. Inspect paddles/handles. 3. Inspect tether cords (tubing and clips). 4. Apply Armoral or similar rubber protectant to tether cords.	1. Clean monorail.
MONTHLY	1. Repeat WEEKLY steps. 2. Check the seat rollers for dirt buildup. 3. Monitor dust/dirt buildup in air inlet & outlet areas. Vacuum as needed. 4. Monitor drive shaft & lubricate with lithium grease as needed.	1. Clean entire machine. 2. Inspect paddles/handles. 3. Inspect tether cords (tubing and clips). 4. Apply Armoral or similar rubber protectant to tether cords.
3 MONTHS	1. Repeat MONTHLY maintenance. 2. Inspect drive cord & clips for wear. Replace as needed. 3. Inspect rewind shock cord for wear. Replace as needed. **- IN HARSH or HUMID ENVIRONMENTS -** 4. Apply lithium grease to screw threads on all nuts & bolts. This will help prevent corrosion and rust.	1. Repeat MONTHLY maintenance. 2. Check the seat rollers for dirt buildup. 3. Monitor dust/dirt buildup in air inlet & outlet areas. Vacuum as needed. 4. Monitor drive shaft & lubricate with lithium grease as needed.
6 MONTHS	1. Repeat MONTHLY and 3 MONTH maintenance. 2. Replace two AA batteries in monitor.	1. Repeat MONTHLY and 3 MONTH maintenance. 2. Inspect drive cord & clips for wear. Replace as needed. 3. Inspect rewind shock cord for wear. Replace as needed.

VASA ERGOMETER - MAINTENANCE DETAILS

CLEAN MONORAIL - To remove dust and particles for a smoother ride of the seat carriage, and to extend the life of the seat carriage rollers. Clean with mild soap & water and a clean rag (do NOT use abrasive detergents). Mineral spirits can be used for grease and stain spots, then wash with clean water. For deep staines, use a mild ScotchBrite™ pad.

⚠ **Caution:** *Do not use an abrasive detergent to clean the the monorail.*

CLEANING THE ENTIRE MACHINE - Thoroughly clean entire machine with a rag or hand towel and multi-purpose cleaner. Clean the monorail as detailed above (do NOT use abrasive cleaner).

PADDLES & HANDLE WEAR - Inspect paddles (swim +/or kayak or canoe) and exercise handles for wear on connection joints. If signs of wear, replace immediately.

TETHER CORD WEAR - Inspect tether cords for wear on cord or plastic clips. Treat tether cords with Armorall™ type protectant when tubes look dry or discolored. Rinse with fresh water if they have been in contact with chlorinated water.

SEAT ROLLER CLEANING - Check the rollers for a buildup of dirt. If you see black specs on the rollers, hold a damp rag (or rag with all purpose cleaner) up against the rollers as you slowly roll the bench back and forth. This will rotate the rollers against the pad, removing the dirt. If you are unable to remove all the dirt, you can use a ScotchBrite™ pad instead of a damp rag.

SEAT ROLLER INSTALLATION & ROTATION - Check the top seat rollers for wear. If top rollers appear to be wearing more than bottom rollers, rotate the top rollers with the bottom rollers. *Detailed instructions on page 75.*

CLEANING AIR INLET/OUTLET SCREENS - Monitor the dust build-up on air inlet and outlet areas (perforated metal located on the front assembly cover and under the damper door cover). Vacuum as needed. *Diagrams and detailed instruction on page 76.*

DRIVE SHAFT LUBRICATION - Apply a layer of lithium grease along the entire surface of the Drive Shaft to prevent corrosion & rust. *Diagrams and detailed instruction on page 76.*

DRIVE CORD REPLACEMENT - Worn drive cord should be replaced with new cord. Signs of wear include fraying threads or any cuts in the cord. It is recommended to replace the Drive Cord Clips and Rewind Shock Cord at the same time.

DRIVE CORD CLIP REPLACEMENT - Replacement of the drive cord clips is needed when the clips are broken. It is also HIGHLY recommended when you replace the Drive Cord.

REWIND SHOCK CORD REPLACEMENT - The rewind shock cord should be replaced with new cord when it shows signs of wear or has lost its elastic properties. Inspect the cord by removing the front assembly cover. The rewind cord is the black or blue cord that is wrapped around the Drive Spools. It is recommended to replace the Drive Cords and Drive Cord Clips at the same time as a preventative step.

LUBRICATION OF HARDWARE - Apply lithium grease or thick oil to all screw threads on all nuts & bolts. This will help prevent corrosion and rust.

SEAT ROLLER INSTALLATION AND ROTATION

1. Remove the rear stanchion from the monorail:

a. Remove any tether cords you may have attached.

b. Loosen the socket set screw on the corner of the rear stanchion sleeve using the 3/16" hex key allen wrench.

c. Loosen and remove the monorail screw and nut (2 1/2" button head screw).

d. Pull the monorail out of the rear stanchion and SLOWLY lower the monorail and the rear stanchion to the ground.

CAUTION: The seat carriage and bench will roll forward, make sure to lower the monorail slowly to avoid pinching your hands.

2. Hold the monorail in one hand and hold the middle underside of the seat carriage and remove the assembly from the monorail.

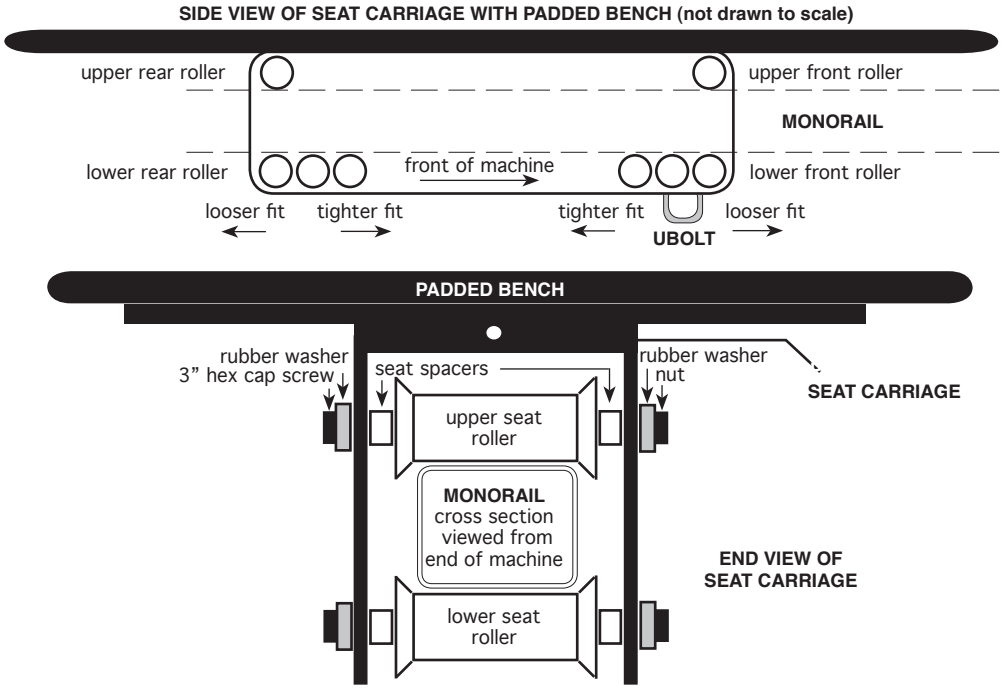
3. Place the padded bench / seat carriage assembly upside down so the rollers are visible.

4. Use two 7/16" wrenches (or adjustable wrenches) to loosen the nut and screw which holds each of the four seat carriage rollers in place. **IMPORTANT**: Note the position of the spacers and rubber washers for re-assembly. See drawing below.

5. Install the new rollers, rotate the rollers, or move the rollers for a tighter or looser fit, making certain that the spacers and washers are positioned exactly as they were before removing them (see drawing below). Tighten the nuts until you see the rubber washer just begin to compress.

NOTE: Avoid over-tightening, as this will place side pressure on the bearings and can cause premature wear. Tighten the nuts until you see the rubber washer just begin to compress. To test tightness, spin the roller - the roller should roll freely, but should not be able to spin freely for more than 2-3 seconds.

6. Replace the seat carriage on the monorail then replace the rear stanchion onto the monorail. Replace and tighten the monorail screw and nut. Tighten the socket set screw on the rear stanchion sleeve with the 3/16" hex key allen wrench.



DRIVE SHAFT, FLYWHEEL, AIR INLET & OUTLET MAINTENANCE

As part of the Ergometer maintenance program, we suggest regular maintenace of a few parts inside the front end assembly. This will require removal of the front cover. Locate the four screws in the upper and lower corners on the front cover of the front end assembly (Figure A). Use the 5/32" allen wrench to remove the four screws.

1. Locate the Flywheel (Figure B). Vacuum both the right and left side of the fan to remove any dust that may have built up. Perform this step more or less frequently based on your environment.

2. HUMID, OUTSIDE or POOL SIDE ENVIRONMENTS: Locate the Drive Shaft (Figure B). Inspect the left and right sides to see if it is getting dry or discolored. If so, apply lithium grease to protect the finish. (Litium grease is included in the Maintenance Kit which is sold on separately on the Accessory & Replacement Parts page at the back of this manual).

3. Locate the Air Inlet & Air Outlet (Figure C). Vacuum the perforated metal areas to remove any dust buildup.

4. Replace the plastic cover. Slide it into position then replace the four screws in each corner. Tighten with 5/32" allen wrench.

Figure A

remove four screws with 5/32" allen wrench

Figure B

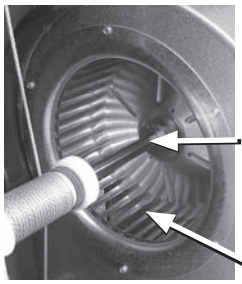
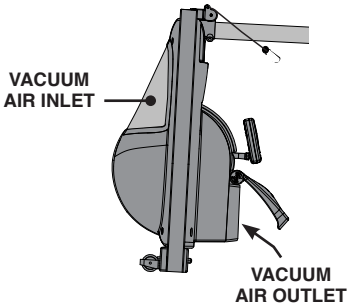
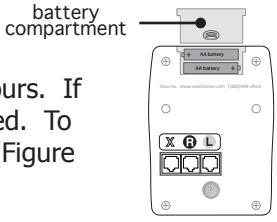


Figure C



VASA ERGOMETER MONITOR (VM) MAINTENANCE



BATTERY REPLACEMENT

The batteries in the Vasa Ergometer Monitor (VM) typically last about 600 working hours. If "LO CELL" appears in the top field of the VM monitor, the batteries need to be replaced. To change the batteries, open the battery compartment on the back of the VM monitor (Figure A). The monitor takes two "AA" batteries.

NOTE: Static discharge may cause the monitor to inadvertently turn on. This will reduce the life of the batteries as the monitor will remain on for 5 minutes until the Battery Save feature is activated.

BATTERY SAVE FEATURE

There is a 5 minute time-out feature on your VM monitor. If there is no "activity" the monitor will power down after 5 minutes ("activity" includes inputs from pulling on the drive cord, pushing buttons, or serial communications with a computer). Any workout information will be cleared from the memory as soon as the monitor shuts off.

IMPORTANT: *The monitor is a sealed unit. DO NOT take apart. Any attempt to disassemble will void warranty.*

TROUBLESHOOTING

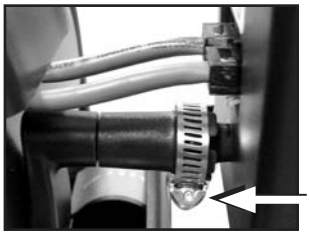
This section contains information for solving potential problems that may arise. Symptoms are listed with suggested remedies.

If you still can not correct the problem after you consult the following pages, please contact our Technical Service Department at info@vasatrainer.com or 1-802-872-7101 (Monday - Friday, 9am-5pm EST). Please have a copy of "Getting to know your Vasa Ergometer" (page 73) in front of you and the Erg nearby with the front cover removed (if relevant to your problem).

MONITOR

SYMPTOM: The monitor is losing data or "zeros out" in the middle of a workout.

Remedy: If the monitor senses inactivity for more than 10 seconds while in the default BASIC MODE, it will display your workout summary. When the cords are pulled after the summary, a new workout will begin counting up from zero. To avoid this, use the preset workout function (pg. 32). If you set up a pre-determined time or distance workout, you can stop for any length of time (less than 5 minutes) without losing your workout data. Keep in mind that the monitor will continue counting time, but the data will not be RESET with only a few seconds or few minutes of idol movement. It will automatically power down after 5 minutes of inactivity.



SYMPTOM: The monitor is unsteady (moving or changing position) during a workout, making it difficult to read.

Remedy: Move the hose clamp over the prongs of the mounting socket, then tighten the hose clamp with a flat-head screwdriver (pg. 14).

SYMPTOM: The monitor turns on randomly by itself.

Remedy: The monitor must be connected to the connection cables to function properly. If the monitor is not in use and has been removed from the front end (no cables connected), it is recommended to remove one or both of the AA batteries. This will prevent the batteries from losing power.

SYMPTOM: The monitor is displaying erratic data (i.e. excessive high or low force, etc.).

Remedy: (1) Be certain the cables are connected properly (Right=Red port/Left=Black port) and fully inserted into the port for a solid connection. Next RESET the monitor by powering off (push the ON/OFF button). Turn back on using the ON/OFF button. The monitor has now been RESET to communicate to the internal Load Cells; or (2) Verify that you are in the correct viewing mode (SWIM vs. KAYAK). The Kayak Mode will display a "K" in the upper left corner and displays distances x5 greater than the swim mode. Refer to page 26 for full details. NOTE: Removing the batteries will reset to SWIM mode.

If neither remedy resolve your erratic readings, please contact Vasa for assistance.

ERGOMETER OPERATION

SYMPTOM: I don't seem to get enough resistance. It seems too easy.

Remedy: (1) Adjust the damper door setting to a higher setting. Settings vary 1 to 7 - #1 is low resistance and #7 is a high resistance. (2) Dust (vacuum) the inlet and outlet areas. (See the maintenance section on pg. 74).

SYMPTOM: The paddles (or handles) are hitting the idler pulley bracket when arms extend.

Remedy: (1) Add or increase the resistance level of tether cord. Tether cords restrict the travel of the bench creating a drag; (2) Anchor the seat carriage & bench assembly to prevent movement. To keep the bench stationary, install the ROM knob kit (optional accessory - pg. 24).

SYMPTOM: The seat carriage sticks or will not glide smoothly on the monorail.

Remedy: Dust and roller debris will accumulate on the rolling surface of the monorail. We recommend routine cleaning of the monorail surface and the roller surface. See the seat carriage roller installation and rotation instructions in this manual (pg. 76). NOTE: New seat rollers typically need to wear into and conform to the monorail. As this happens, they will naturally emit some debris which will need to be removed. Typical break-in takes between 25 - 200 repetitions.

SYMPTOM: The seat carriage is wobbly or loose.

Remedy: The top seat rollers may have worn down. Move the bottom two seat rollers so they are closer to the monorail. See instructions for seat roller installation and diagrams located in the maintenance section (pg. 76).

SYMPTOM: The padded bench feels wobbly or rattles.

Remedy: It is likely that the bolts holding the bench on the seat carriage are loose and need tightening, or the seat rollers need adjustment (see previous symptom & remedy). Tighten all four bolts with the 7/16" wrench. Make sure you have used the lock-washers and flat washers between the bolt head and the seat carriage bracket in order to secure the bolts. (See assembly instructions - pg.5.)

Symptom: The seat carriage bumps the rear stanchion in between each stroke. How can I eliminate this "bumpy ride"?

Remedy: (1) Increase the tempo of your stroke; (2) increase your force per stroke; (3) decrease the level (thickness) of tether cord; (4) anchor the seat carriage & bench assembly to prevent movement. To keep the bench stationary, install the ROM knob kit (optional accessory - pg. 24); or (5) if you weigh more than 200 lbs, consider opening the damper door wider or putting a 1 – 2 inch thick block under the rear stanchion base bar to reduce the slope angle of the monorail.

SYMPTOM: The drive cord does not rewind all the way or it does not rewind fast enough.

Remedy: (1) Replace the rewind shock cord. The recoil strength of the rewind shock cord will decrease over time and will need to be replaced. Order information can be found on page 83; or (2) If you have removed the front/inlet cover and discovered that the shock cord is tangled around one/both drive spool(s), please contact Vasa.

STATEMENT OF GUARANTEE / WARRANTY

The Vasa Ergometer is guaranteed against all defects in materials and workmanship for non-moving parts for as long as you own your machine when used according to the instructions in this manual. We will repair or replace free of charge any **non-moving part** found to be defective. This guarantee is valid only when accompanied by dated proof of purchase.

GUARANTEE LIMITATIONS:

The Vasa, Inc. lifetime guarantee does not include the monitor batteries, monitor, tether cords, rewind shock cord, hand paddles, handles, or seat carriage rollers, which are considered moving parts (see limited warranty). Vasa, Inc. will not guarantee against rust, paint peeling, or tarnish if your machine is stored or used in or near the following environments: outdoors near ocean air; outdoors exposed to precipitation, humidity and direct sunlight; next to swimming pools with high humidity and/or chemical-rich environments. This guarantee does not apply to damage caused to any part by accident, misuse, abuse, alteration, improper handling and/or improper assembly. In no event will Vasa, Inc. be liable for incidental or consequential damages resulting from a defective unit or improper assembly or use.

LIMITED WARRANTY:

Vasa, Inc. will warranty, for 12 months from the date of purchase, flywheel, monitor, hand paddles, handles, tether cords, and seat carriage rollers. Vasa, Inc. will warranty, for 6 months from the date of purchase the rewind shockcord. These parts are considered moving parts which are designed to wear well for more than indicated time, but are subject to breakage under abnormal use. This warranty does not apply in the case of damage to any part due to accident, misuse, abuse, alteration, improper handling and/or improper assembly. In no event will Vasa, Inc. be liable for incidental or consequential damages resulting from a defective unit or improper assembly or use.

HOW TO OBTAIN GUARANTEE OR WARRANTY SERVICE

STEP 1: Identify the serial number that is located on the top service of the fanwheel housing. It is visible by looking through the air inlet perforated metal screen.
STEP 2: Call Vasa Customer Service at the numbers below to inform us of the problem you are experiencing. If you are instructed to return the part for replacement or repair, please follow Steps 3 thru 5 below.
STEP 3: To return a part for replacement or repair, please complete the Warranty Claim form on the next page (photocopy it first). Include your dated proof of purchase (if available), serial number, return authorization number (RA# is provided by contacting Vasa, Inc. in Step 2 above) and a written description of how the part(s) failed, so that we may continue to maintain our highest quality control.
STEP 4: Properly package the defective or malfunctioning part(s). It is the responsibility of the purchaser to ensure that the product is properly packaged and insured for return, as any damage suffered is at the purchaser's risk and is not covered by this guarantee. The purchaser is responsible for all shipping costs. We recommend saving the original packaging from your Vasa Ergometer. If you do not have the original packaging, you may purchase replacement packaging from Vasa.
STEP 5: Ship the defective or malfunctioning part(s) and the Warranty Claim Form to us at the address on the Warranty Claim Form.
STEP 6: Upon receipt of the part(s), we will inspect the defect or damage claimed. Vasa, Inc. retains the option of replacing or repairing the parts. We will send the replacement part or the repaired part back to you in a timely manner.

We at Vasa consistently strive to provide you, the customer, with the highest quality products and best service. If you are ever dissatisfied with any of our products or service, please contact us immediately. We value your business. Thank you!

VASA CUSTOMER SERVICE
Tel: 1.802.872.7101 Fax: 1.802.872.7104 or 1.501.421.6254
9am-5pm Eastern Standard Time, Monday - Friday
Email: info@vasatrainer.com • Website: www.vasatrainer.com

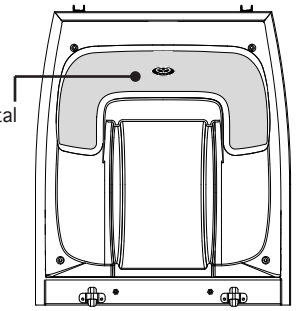
VASA WARRANTY CLAIM FORM

If you have a defective or malfunctioning part, please contact Vasa by phone or email. Next, complete this form in its entirety and send it to us along with the part you wish to have repaired or replaced.

1. Invoice#: _____ Date of Purchase: _____

2. Serial Number: _____

Located on the top of the fanwheel housing. It is visible by looking through the air inlet perforated metal screen.



3. Today's Date:_____

4. Return Authorization Number: _____

Contact Vasa, Inc. to receive this number prior to making a return.

5. Your Name: _____

6. Your Address: _____

_____

City_____ State _____ Zip _____

7. Your daytime telephone number: ( ) _____ - _____

Your Email address: _____

8. Please describe the problem you are having:

Part Name	Part #	Description of the Problem
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

9. Please contact Vasa prior to making a return:

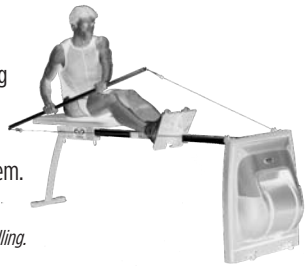
Vasa, Inc. - Warranty Service
1 Allen Martin Drive #5
Essex Junction, VT 05452

Tel: (802) 872-7101
Fax: (802) 872-7104 or (501) 421-6254

Email: info@vasatrainer.com
Website: www.vasatrainer.com

ACCESSORIES

Kayak Kit



Offers realistic kayak paddling workouts without traveling to the water. Change your set-up from *Swim to Kayak* or *Kayak to Swim* in under a minute. Kit includes: kayak shaft, foot brace, and a monorail monitor mounting system.

Kayak Kit: $150 Part # KAYAK (11 lbs)

Canoe shaft also available - ideal for Dragon Boat or Olympic style paddling.

Ankle Straps

Ankle straps allow you to attach your legs to the drive cords on the Vasa Ergometer. Using the ankle straps you can perform exercises like breaststroke kick, leg extensions, hip adduction/abduction and hip flexion/extension.

Ankle Straps: $25 Part # 8M-WAS (1 lb)

Protective Cover

Protect your Vasa Ergometer against weather and dirt with this weather & UV resistant cover. Also provides an excellent deterrent for unwanted use of equipment. Elasticized and lockable bottom. Includes storage bag.

Weather Cover: $50 Par# COVER (3 lbs)

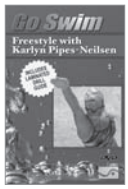
TRAINING VIDEOS

NEW Better Technique + More Power = Faster Swimming

This NEW video features swimmer & coach Karlyn Pipes-Neilsen and Triathlon Coaches Tim Crowley and Al Lyman for training & technique tips for improving your swim. Learn how to improve your technique so you can get more power in your stroke. These tips can be used in your training in the pool as well as on the Vasa Ergometer.

Better Technique DVD: $29 Part # DVD-BT (1 lb)

Go Swim Freestyle DVD with Karlyn Pipes-Neilsen



Karlyn shares her six freestyle focus points for every level of swimmer. The swimming footage of Karlyn, combined with clear, step-by-step instruction, will help take your freestyle to the next level.

Freestyle DVD: $39 Part # KPN-DVD (1 lb)

SWIMERVALS™

Join Coach Troy Jacobson and four competitive athletes for two effective, "kick-butt" indoor swim workouts on the Vasa Ergometer! SWIMerVALS workouts will increase your stroke power, build your endurance and improve your race splits! Perfect for triathletes, distance and open water swimmers!

Swimervals DVD: $35 Part # SWIMERVAL (1 lb)

REPLACEMENT PARTS

Rewind & Drive Cord Replacement Kit

Rewind Cassette Assembly

Drive Cord & Drive Cord Hook

Drive system cords and clips will need to be replaced over time with normal use. Kit includes: Rewind Cassette Assembly (qty 1); Rewind Shock Cord/spare (qty 1); Drive Cords (qty 2); Drive Cord Hooks (qty 2); Safety Clamps (qty 2); tools and instructions.

Rewind Cassette & Drive Cord Replacement Kit: $99

Part # VE-1-RR-KIT (5 lb.)

Tether Cords

Rubber tubing cords, with super strong polycarbonate clips that provide tension to "tether" the bench.

Tether Cords: $10 each

Part # VE-tether (.5 lb. each)

NEW Power Paddles

The Power Paddles are special hand paddles designed to position the hand, wrist, and forearm "fused" together as an all-in-one "blade." This allows the athlete to set a high elbow catch while engaging the larger, more powerful lats and pectoral muscles to deliver more power (watts), for more efficient swimming.

Power Paddles: $35/pair Part # PWR PPAD (1 lb.)

Includes paddles, wrist tube and bracket ready to attach to drive cord.

Deluxe Plastic Paddles

Ergonomically-designed to fit the contour of the hand for swimming or surf paddling. Lightweight and durable.

Deluxe Paddles: $30/pair Part # DLX PPAD (1 lb.)

Includes paddles, finger tube, wrist tube and bracket ready to attach to drive cord.

Exercise Handles

Essential for total body strength training. These rugged handles are made of a tough polycarbonate, nylon webbing and metal D-ring.

Exercise Handles: $25/pair Part # 8M-WHD (1 lb.)

Seat Roller & Hardware

ROLLER: Delrin roller with bearings for your seat carriage.

ROLLER HARDWARE: Inspect your roller hardware before you order rollers to see if you need to replace the hardware.

ROLLER: $8 each Part # 125PS (.25 lb.)

HARDWARE SET: $3 each Part # 126ABCD (.25 lb.)

Note: There are 4 rollers & 4 hardware sets per machine. Sold individually.

Prices subject to change without notice.

order form: vasa ergometer parts & accessories

Step 1: Select your Vasa Ergometer Model (check one)

____ **Vasa Swim Ergometer** ___ purchased before December 2007 ___ purchased January 2008 or later
____ **Vasa SpaceSaver Ergometer** ___2008 model, wall mounted (purchased 1/08 - current)
____ **Vasa Kayak Ergometer** ___ purchased before December 2007 ___ purchased January 2008 or later

Serial Number: _____
(located on top of fanwheel housing... see page 81 for details on where to find your serial number)

Step 2: Shipping Address

Name
Address
City
State Zip
Telephone
Email

Step 3: Billing Address (if different)

Name
Address
City
State Zip
Telephone
Email

Step 4: List the items you wish to order

DESCRIPTION OF ITEM	PART #	SIZE	QUANTITY	UNIT COST	TOTAL COST

Step 5: Shipping

Weight	Ground	2-Day	Next Day
0-1 lb.	$7	$20	$35
2-4 lbs.	$12	$30	$45
5-10 lbs.	$17	$40	$60
11-15 lbs.	$17	$50	$80
16-20 lbs.	$22	$60	$90
21-30 lbs.	$27	$80	$115
31-40 lbs.	$35	$100	$135
41-50 lbs.	$42	$120	$160
51-60 lbs.*	$48	$140	$190
transit time	1-7 days	2 days	1 day

Item weights are in parentheses after item part number.
Please contact Vasa for a shipping quote for orders outside the continental US states or for shipping weights exceeding 60 pounds.

Prices subject to change without notice. VTIM-0710

Sub Total	
Shipping & Handling (see chart on left)	
Total	

Step 6: Method of Payment

◯ Certified Check or Money Order ◯ Check (note: order will be held 2 weeks for check to clear)

◯ Purchase Order (note: please include official written purchase order. School, government and YMCA/YMCA purchase orders accepted.)

◯ Visa ◯ MasterCard ◯ Discover

Account #: _____ - _____ - _____ - _____ Expiration Date: ___ / ____ CVV#_____

Name on Card: _____ Signature: _____

Step 7: Place your Order

SHOP ONLINE: **www.VASATRAINER.com**
CALL TOLL FREE: **1.800.488.VASA**
INTERNATIONAL, please call: **1.802.872.7101**
FAX: **1.802.872.7104 or 501.421.6254**

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